OCTOBER 13, 1958

STEEL
The Metalworking Weekly

A PENTON PUBLICATION

A PROGRAM FOR MANAGEMENT
1958 . . . No. 9

PURCHASING FOR PROFIT

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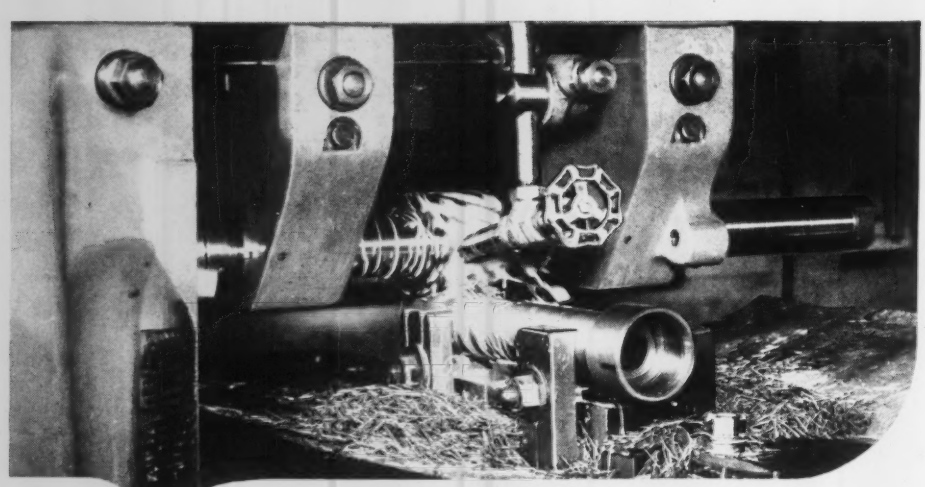


"I cut fabricating costs with B&W Tubing!

As a production engineer, my test for tubing is on the assembly line. And I find there that B&W Tubing saves me both time and material, by eliminating rejections and avoiding fabrication problems!"

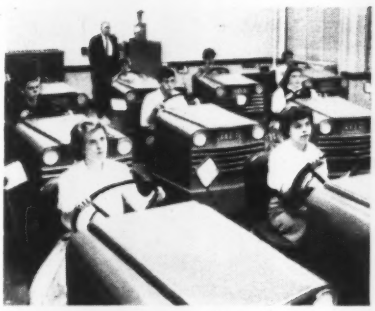
If you're concerned about the costs of any of your fabrication operations . . . boring, broaching, drilling, reaming, shaping or milling . . . you'll do well to consider quality-tested B&W Tubing. It's available in a broad range of grades, tempers, analyses, sizes, finishes and properties, as nearly ready for immediate application as possible. Uniform in wall thickness, diameter and concentricity, B&W Tubing can reduce your forming operations to the minimum consistent with your product requirements. With B&W Tubing, you can produce a better product, faster and more economically.

Specify B&W Tubing the next time you have a tubing problem. Get in touch with Mr. Tubes, your local B&W representative or independent distributor. Or write today for Bulletin TB-352 to The Babcock & Wilcox Company, Tubular Products Division, Beaver Falls, Pa.

TA-8003-G1

Seamless and welded tubular products, solid extrusions, seamless welding fittings and forged steel flanges—in carbon, alloy and stainless steels and special metals.

Classroom "automobile" trains safer drivers



As the moving picture takes students through a variety of traffic situations, their reactions are automatically recorded on a card for evaluation by the instructor (standing, at rear of classroom).

These students are learning safe-driving habits, judgment, and skill by experiencing true-to-life driving conditions—without leaving the classroom. Each student drives his own Drivotrainer, a stationary "auto" developed by Aetna Casualty and Surety Company, Hartford, Conn., and built largely of Bethlehem steel sheets by Automatic Voting Machine Corporation, Jamestown, N.Y.

The moving picture takes the student through a wide range of actual traffic situations. Using the Drivotrainer's pedals and other controls just like those on real cars, the trainee meets each situation as it arises. His performance is automatically recorded on a score card for the instructor's evaluation. Now teachers can train more, better, and safer drivers at lower cost per pupil.

In any sheet metal operation, you can depend on Bethlehem sheets for accuracy in gage, uniformity in surface, and quality. If you use sheets perhaps we can help you turn a problem into a profit. Just call our nearest office.

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BETHLEHEM STEEL

BETHLEHEM STEEL

"TASK-FORGING"... a new metal forming idea!

"It must be stronger, no larger or heavier, and must cost less per unit! Can you do it?" That's what a leading manufacturer asked COMMERCIAL.

The part? A ball-joint housing – flanged at one end, belled at the other, and open at both ends. It *was* being produced as a steel casting for a key part of the steering and driving mechanism in a line of earth moving equipment. A tough upset forging assignment? Certainly – even for COMMERCIAL!

At this point, COMMERCIAL's "Task-Forging" group – double-teaming with the manufacturer – took up the challenge. It came up with the right answers and convinced the manufacturer that the housing could be produced as a closed-die forging–on an 8" upsetter from 4½" round bar stock by the internal displacement method. The result: A stronger part at less cost per unit. And here's why.

The controlled grain flow and efficient metal distribution afforded by upset forging assured maximum tensile and torsional strength for a stronger part. And savings in costs per unit piled up on the following counts:

1. Reduction in weight from 95 to 80 lbs.–or a 15 lb. metal saving per unit.
2. An initial cost saving of 90¢ per part.
3. A 10% saving on machining–closer tolerances, some dimensions even to finished size.
4. No rejects due to hidden metal faults.

"Task-Forging", COMMERCIAL's new metal forming idea, may be able to write the same kind of happy ending for *your* metal component parts story. To find out just send us a blueprint or sketch, sample or prototype of your part. Address: Commercial Shearing & Stamping Company, Dept. L-42, Youngstown 1, Ohio.

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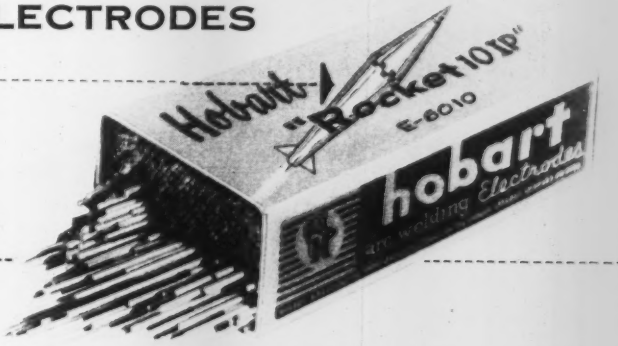

. . . for faster, low cost direct current welding

Hobart's new DC Rectifier's unique design and exceptionally smooth arc action of "Rocket 10 IP" electrodes are the perfect combination. But first let's look at the advantages you gain through Hobart direct current welding:

1. DC can be used with all the latest types of electrodes — whether designed for AC or DC welding.
2. DC is easy to handle on out of position welding.
3. DC welding permits polarity flexibility which allows the use of specially designed, high speed welding electrodes. Some of the most popular electrodes used, where DC welding is preferred, are E-6010, E-6012, hard-facing electrodes, aluminum electrodes, and carbon electrodes.
4. DC welding allows the use of the Inert Gas process without the need for high frequency current.

Hobart's DC Rectifier's unique design is a blend of rugged construction and superior performance. It provides extra convenience features such as: remote control, polarity selection at the flip of a switch, easier arc control, a wide welding range and cool operation. You can depend on this Hobart for years of trouble-free service because it's ruggedly built to "take it." "Rocket 10 IP" electrodes have iron powder in the coating. Used in any position, they always produce a penetrating, forceful, yet smooth arc, flat bead and have better arc stability. When welding out of position or down-hand the weld metal is practically free from porosity. Slag is thin, brittle and easy to remove—saving costly cleanup time. **HOBART BROTHERS CO., Box ST-108, TROY, OHIO. Phone FE 21223.** *"Manufacturers of the world's most complete line of arc welding equipment."*

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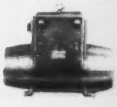

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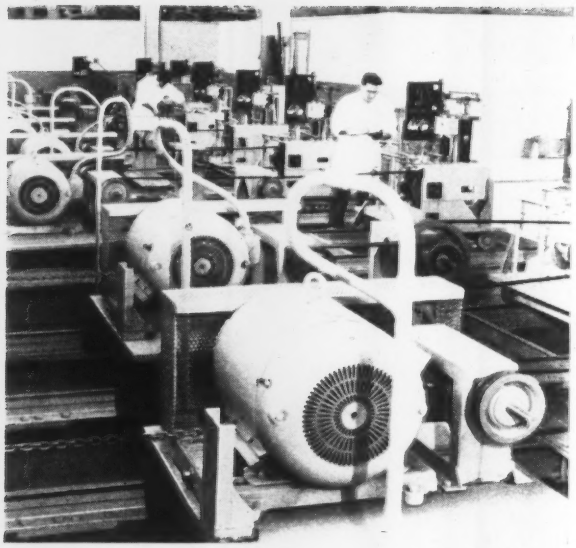
Why V-Belts with the Green Seal meet every test



Nearly one-third of all electric power used at the Goodyear V-Belt plant goes into testing, checking and development operations. These giant dynamometers, for example, test larger belts in all speed ranges and with various pulley diameters—with belt loads from zero to 100 h.p. The effects of reverse bending, various placements of idlers and high or low tension are also checked.

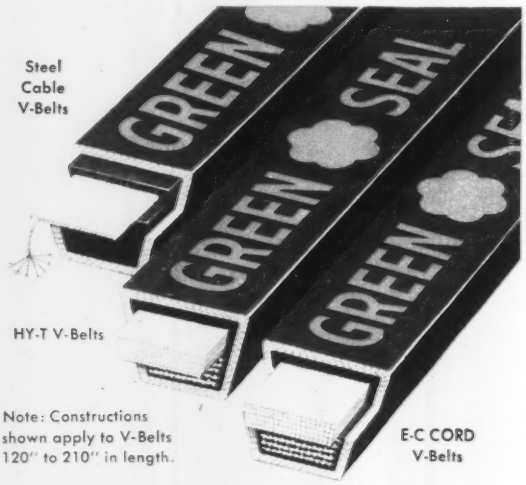
Dimensional stability! Belts are even test-run in closed, high-temperature ovens—to verify that their 3-T (Triple-Tempered) construction remains dimensionally stable under extreme operating conditions.

Perfectly matched sets! Belts are carefully measured on ultra-precision machines – then carefully coded to guard against "loafers" – or belts that overwork.

High strength, low stretch! Belts are subjected to "breaking point" tensile-strength tests in the Goodyear laboratories – to insure long, trouble-free service on your drives.

Maximum resistance to shock-loads! Belts are "tortured" on special machines that simulate the severest service – your protection against early belt failure.

Clean, smooth-running operation! Special nondusting rubber cover compounds are continually tested for friction balance – to give you freedom from sticking or grabbing in the grooves.



Note: Constructions shown apply to V-Belts 120" to 210" in length.

To pay off in –

Maximum trouble-free horsepower hours at minimum cost. That makes it a real gamble to settle for anything less than V-Belts with the Green Seal. See your Goodyear Distributor – or write Goodyear, Industrial Products Division, Lincoln 2, Nebraska, or Akron 16, Ohio.

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This Week in STEEL

The Metalworking Weekly

October 13, 1958
Vol. 143 No. 15

EDITORIAL 45

Management should help make facts available on right-to-work issue before voters in six states.

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PURCHASING FOR PROFIT

It can be done if you have the right caliber of people; a management that encourages initiative and delegates responsibility; and equality for the purchasing department.

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STEEL, the metalworking weekly, is selectively distributed without charge to qualified management personnel with administrative, production, engineering, or purchasing functions in U. S. metalworking plants employing 20 or more. Those unable to qualify, or those wishing home delivered copies, may purchase copies at these rates: U. S. and possessions and Canada, $10 a year; all other countries, $20 a year; single copies, 50 cents. Metalworking Yearbook issue, $2. Published every Monday and copyright 1958 by The Penton Publishing Co., Penton Bldg., Cleveland 13, Ohio. Accepted as controlled circulation publication at Cleveland, Ohio.

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behind the scenes

The Art of Buying

Buying and selling are pretty old stuff in the history of man. It can be argued that man is not too old as far as the history of the world is concerned. So buying and selling are not so old, after all; why make a big to-do over it? Well, scientific buying is of the utmost importance to management; it is the theme of STEEL's Program for Management story this week, which happens to be ninth in the series covering the subject of managing for profit. Earlier installments described how management could balance itself; how to control production; how to manage defensework; how to build a labor contract; how to set prices; how to know your customers; how to chart the market; how to build marketing men.

Purchasing for profit doesn't necessarily mean sharp practice, as in the brotherly deal between Esau and Jacob, when Jacob purchased an entire birthright for a pot of soup. This is the only classical illustration that comes to mind at the moment, and it is fortunate, too, because we happen to have some verses at hand concerning this celebrated family euchre. Let us shift forthwith into some kind of trochaics:

Jacob was a clever man,
Shrewd and quick and tricky;
Sweet talk was his longest suit—
Hands were moist and sticky.
Oily was his golden tongue!
Hooked his guileless brother:
Double-crossed his trusting twin
In partner with his mother.

Esau was a simple man,
Strong and tough and hairy;
Hunted in the fields and hills—
His heart was true and merry.
Shaggy was his tangled hair,
Smelly were his garments,
Made from skins of goats, 'tis said,
And other wooly varmints.

Esau was a friendly man;
His trust was never shaken:
Trusted Jacob all the way—
Trusted, and got taken!
Tempted by a pot of soup,
Never even guessing
He'd be cheated bare and blind
Of birthright and of blessing!

Jacob into Canaan strode,
Esau into Edom;
Jacob panted after wealth,
Esau, after freedom.
Each the father of a race,
Each opposed the other.
Jacob won respect from men,
But strong men loved his brother.

Modern purchasing should be done on the basis of value analysis, make-or-buy criteria, and other tools calculated to put more science into the purchasing operation. The story begins on Page 89, and, as usual, reprints will be available as long as the supply lasts.

Canadian Capers

When you read the article about "Aluminum Powers Up" in STEEL (Sept. 29, p. 57) you weren't aware that an 18-lb fish was involved, were you?

Aluminium Ltd. (dig that minny-yum) was host to 14 members of the press back in September. It invited the boys to look at the 1 million-hp hydroelectric plant the Canadians were building 500 ft down in solid rock at a place called Chute-de-Passes, Quebec, not to be confused with Shoot de Works, Nevada. STEEL's crew-cut choirmaster, Associate Editor Robert Jaynes, was much in evidence, sampling the pre-Cambrian rock of the Laurentian Shield, and making notes on everything but birch bark. He was deeply impressed by the cordiality of his hosts, and more than a little staggered by their mighty engineering feats.

On the night before the journalistic junket was shipped back to Montreal, Robert plucked a lucky number from a hat, and won an 18-lb gray trout. "A splendid specimen of the salmonidae family," Bob declared later. "Why, I was a year old myself before I weighed that much."

"What did you do with the beast? Just hold it in your arms all the way to Montreal?".

"Certainly not. Although we flew in, we came out in taxis. The fish came later."

"Wait a minute; Canada is filling up, true enough, but how long have taxis been operating in the north woods? And are you trying to say that the fish was too big to get into the taxicab?"

"Well, the weather closed in, and we couldn't fly—so those wonderful aluminum—I mean aluminium—people ordered a fleet of cabs from the nearest town, more than 100 miles away, and we all came out of the bush in style. The fish came later by mail; like a cigaret, you know."

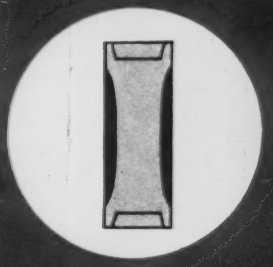
"How's that?"

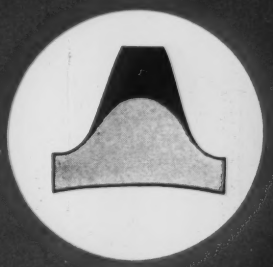
"So round, so firm, so fully packed."

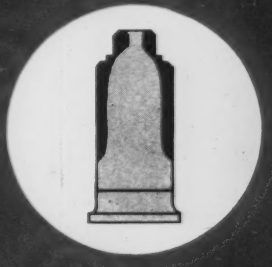
Shrdlu

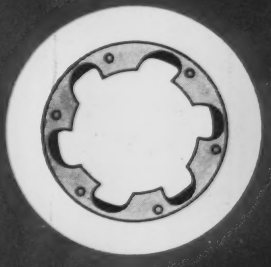
(Metalworking Outlook—Page 41)

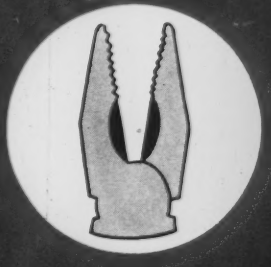
NEW CINCINNATI
flamatic®











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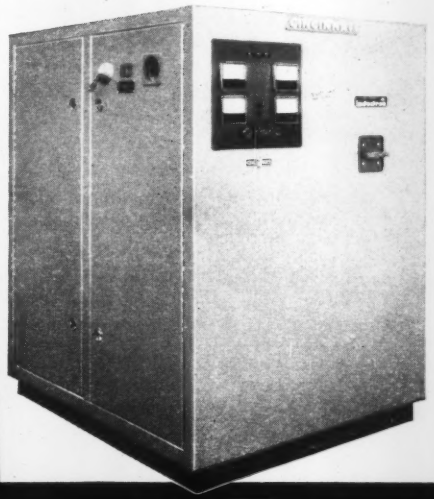
on precision selective surface heating

Take your selective surface hardening, heating and brazing problems to Cincinnati builders of new and versatile flame and induction heating machines. Whether your work is on high production quantities or small lots of different size parts, you can get the hardness you want, where you want it, using the heat source and method most economical for you.

For detailed information, write for catalogs on the Inductron, M-1993, or the Flamatic, M-2015, or better still call in a Meta-Dynamics Division field engineer. Backed by the resources of Cincinnati's completely staffed and equipped heat engineering laboratories, your needs will be analyzed, your parts "test run" and specific recommendations made.



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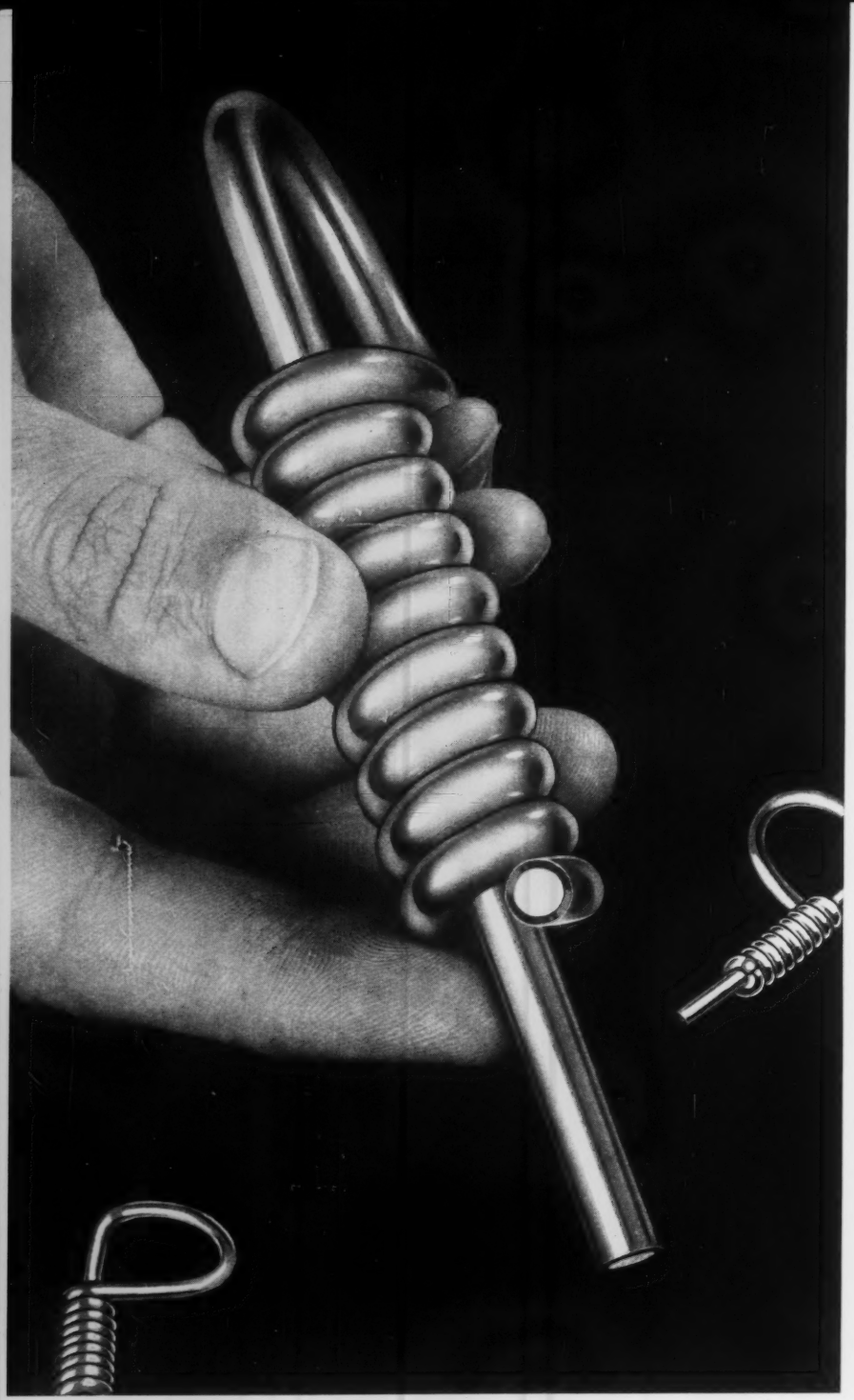

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Even the most severe usages known cause no measurable deterioration of the copper coating on Copperply Wire. This is both field and laboratory proved!

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SPECIAL CONDITIONS_____

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Company_____

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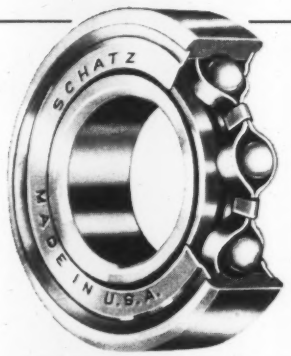

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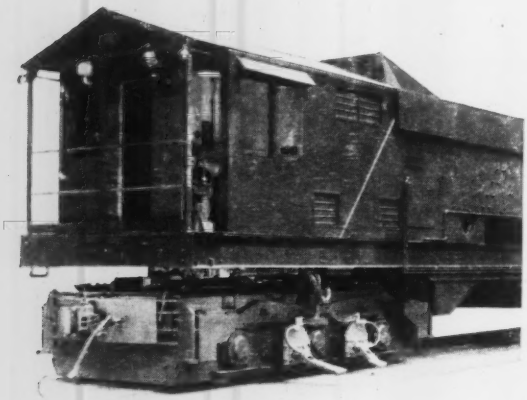

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LETTERS TO THE EDITORS

Torpid Attitude on Marketing?

Please send a copy of the article, "Building Marketing Men" (Sept. 22, Page 69), No. 8 in 1958's Management series.

This article in my estimation is necessary reading and study for all levels of management in the steel industry.

As a relative tyro in the industry, I have been struck by what appears as a torpid attitude toward marketing. Everything seems aimed at production and tonnage with little publicity given to profitability.

John F. Finnegan
Market Analyst
Alan Wood Steel Co.
Conshohocken, Pa.

Insuring Business Survival

I am interested in your article, "Will Your Firm Die with Its Keyman?" (Sept. 22, Page 48). Could you send me up to ten copies?

Homer F. Butler
H. F. Butler Inc.
Union, N. J.

Joe Magarac: Industry Symbol?

Your article, "Today's Joe Magarac Wears Tailored Clothes . . ." (Sept 15, Page 148), seems strangely familiar to us. Our July 7 ad (Page 91) for Erie Forge & Steel Corp. revived the symbolic "Joe Magarac" of *Saturday Evening Post* fame.

Why isn't it a good idea to let Joe walk the pouring floors of steel as Paul Bunyan still tramps the forests?

Maybe, like having a "king," we need a symbol to rally 'round in the industry. You are the one who can do this "resurrection" best!

C. E. McKinney
Davies & McKinney Advertising
Erie, Pa.

Colorado Has Most Molybdenum

Your inclusion of molybdenum in the statement, "Many of the world's best deposits of chromium, manganese, molybdenum, titanium, tungsten, vanadium, and the minor metals are in foreign countries," rather surprises us. This is found in your article, "A Look at Raw Materials" (Sept. 15, Page 152).

You doubtless are aware that the single deposit at Climax, Colo., has accounted for between one-half and two-thirds of the world's output of molybdenum and has

(Please turn to Page 12)

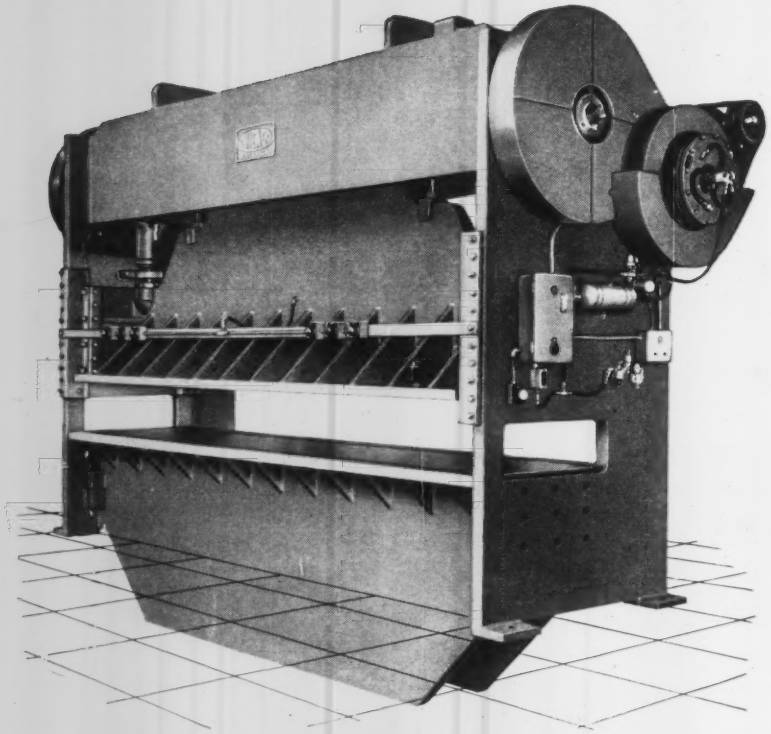
Youngstown flat-rolled steel

will help build the cars of his day

Sleek, low-sweeping bodies on vast numbers of cars produced in *his* day will call for far greater quantities of flat-rolled steel than was needed in Dad's time. Youngstown, today, is anticipating tomorrow's need for more and better flat-rolled steel. Continuing advancements in research and steel-making facilities make certain that when he, and millions of others, are ready for their 1979 models . . . *Youngstown flat-rolled steel will help produce them.*

THE
YOUNGSTOWN
SHEET AND TUBE COMPANY

Manufacturers of Carbon, Alloy and Yoloy Steel
Youngstown, Ohio



CHICAGO DREIS & KRUMP

PRESSES

STRAIGHT-SIDE TYPE

large die area

capacities up to 400 tons

This is a typical model of CHICAGO straight-side-type presses used for multiple punching, notching, and trimming operations. This press with a die area of 48 inches by 198 inches has a capacity of 200 tons.

Complete recommendations for any job on request.

6674

CHICAGO DREIS & KRUMP

Press Brakes • Straight-Side-Type Presses • Press Brake Dies

Hand and Power Bending Brakes • Special Metal-Forming Machines

DREIS & KRUMP

MANUFACTURING CO.

7458 South Loomis Boulevard, Chicago 36, Illinois

LETTERS

(Concluded from Page 10)

produced over $500 million worth of products. The 100 millionth ton of ore was mined in February, 1957, and known reserves of ore are sufficient for decades to come.

As far as we know, molybdenum deposits outside of the U. S. are minor in comparison to the Climax deposit. Most of the foreign production is a byproduct of copper mining.

Reuel E. Warriner
Vice President-Sales
Climax Molybdenum Co.
Div. of American Metal Climax Inc.
New York

Job Simplification Task Force

We are conducting a supervisory training course on the simplification of job methods.

We would appreciate 20 reprints of the article, "To Boost Productivity, Consult Your Employees" (Sept. 29, Page 65).

R. T. Beeghly
Metal Carbides Corp.
Youngstown

STEEL Gets Passed Around

Will appreciate your forwarding the first five of your Program for Management articles. Our copy of STEEL is passed through so many departments that it is almost impossible to review these articles at a time most suitable for reading.

D. B. Angell
Purchasing Agent
Economy Baler Co.
Ann Arbor, Mich.

Excellent Report on Russia

Your Sept. 8 issue contains the special report, "Soviet Steel Industry" (Page 85). It is an excellent one, and I would appreciate three additional copies.

Robert J. Wagner
Industrial Relations Manager
Harbison-Walker Refractories Co.
Pittsburgh

Appreciates Pricing Article

Having been connected with the pricing problems of the machine tool industry for many years, your article, "Pricing for Profit" (June 16, Page 87), was read with interest and appreciation. I would be pleased to receive a copy.

D. C. Handy
Manager of Pricing
Jones & Lamson Machine Co.
Springfield, Vt.

Attention Drawn to Article

In your Aug. 25 issue, an article entitled, "Productivity: How To Measure It . . . How To Boost It" (Page 52), caught our attention. Ten additional copies could be used at our plant if they are available.

R. E. Walther
Personnel Director
Dayton Steel Foundry Co.
Dayton, Ohio

In rotary drilling, pulling a 100-ton, two-mile string of drill pipe subjects the drilling line to the terrific stresses imposed by fast acceleration, shock loads, bending and overwinding on drums. Only wire rope with the highest degree of quality in hardness, strength and fatigue resistance can be used, for toolpushers know that . . .

A quality rope is a safe rope

Whether you use wire rope in the field or in a factory, *safety is just as important to you.* When you buy "bargain" rope you bargain with safety. It can cost you more than the pennies you save. Buy on the basis of *quality*—buy Wickwire Rope.

For extra strength—buy Wickwire's Double Gray IWRC extra improved plow steel wire rope

WICKWIRE ROPE — A CF&I PRODUCT

CF&I

LOOK FOR THE **YELLOW *TRIANGLE***

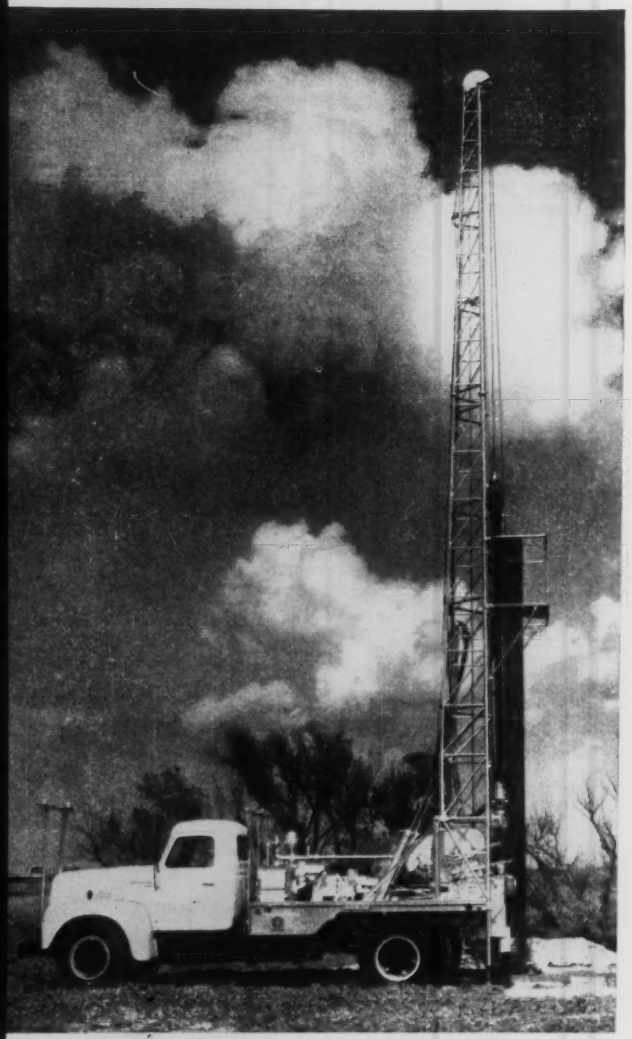
PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Denver • El Paso Farmington (N. M.) • Fort Worth • Houston • Kansas City • Lincoln (Neb.) • Odessa (Tex.) • Oklahoma City • Phoenix • Pueblo Salt Lake City • Tulsa • Wichita • **PACIFIC COAST DIVISION**—Los Angeles • Oakland • Portland • San Francisco • San Leandro Seattle • Spokane • **WICKWIRE SPENCER STEEL DIVISION**—Boston • Buffalo • Chattanooga • Chicago • Detroit • Emlenton (Pa.) New Orleans • New York • Philadelphia

5736

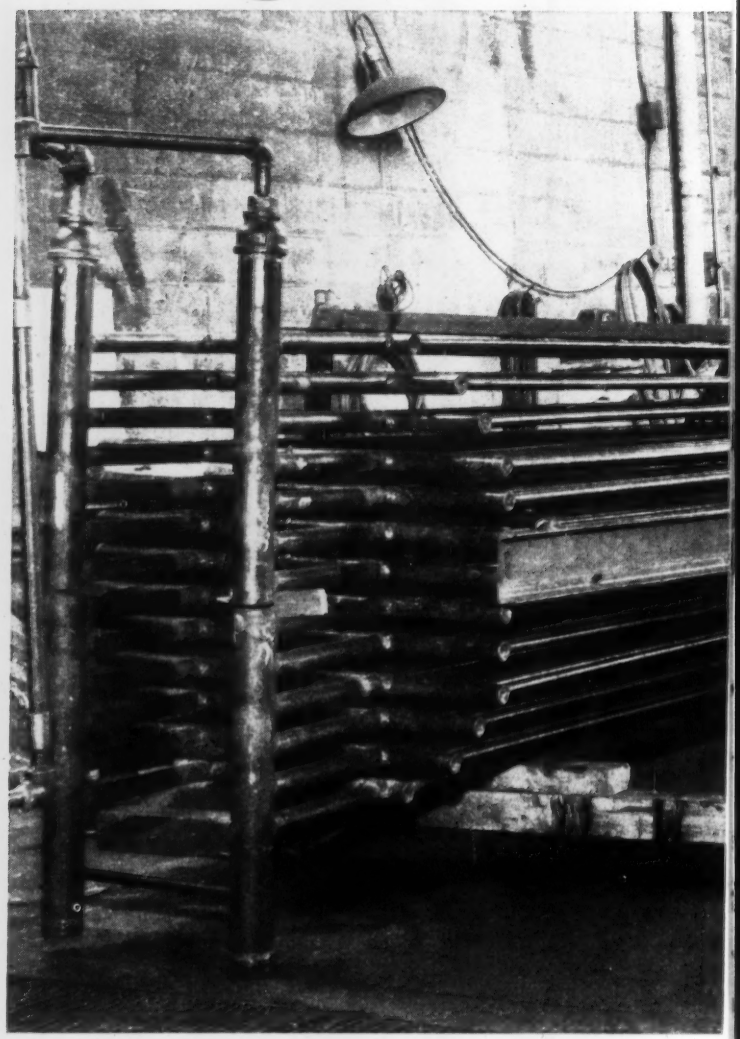
How they built it better

with USS National



DRILLING RIG This drilling rig, an all-purpose, truck-mounted unit called the 1500 HOLEMASTER®, will handle drill pipe and casing loads up to 25,000 lbs. It is rated to drill to 1,500 feet with 2⅜ inch drill pipe. Over 400 feet of National Tube's Shelby Seamless Steel Tubing was used extensively in the 42-foot mast because it offers the ultimate in strength and rigidity in proportion to its size and weight.

Built by George E. Failing Company, Enid, Okla.



HEAT EXCHANGER The USS NATIONAL Seamless Steel Tubes in this 8-ton heat exchanger, fabricated for Solvay Process Division of Allied Chemical & Dye Corporation, were bent 193 times! What's more, fabrication involved 584 pipe welds of various types and 1,720 inches of fillet welding. The 35-foot-long, 5-foot-high bundle consists mainly of ¾-inch Schedule 80 NATIONAL Seamless Pressure Tubes. Complete uniformity, ready workability and superior welding characteristics are inherent in every foot of USS NATIONAL SEAMLESS.

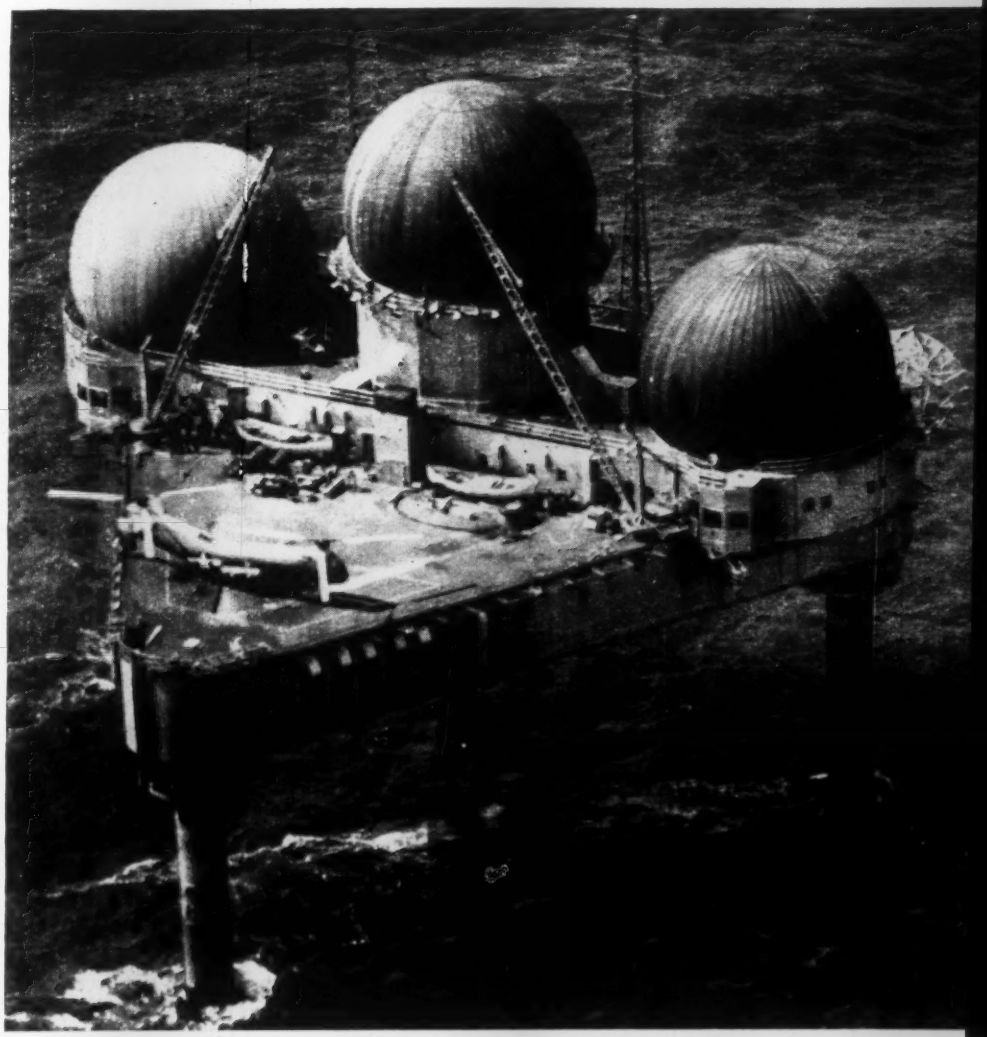
Pipe fabricators: Cornell & Underhill, Inc., Hoboken, N. J.

USS NATIONAL SEAMLESS PIPE AND TUBES might be just the materials you need to cut costs, increase strength, shock-absorbency and workability in your product. NATIONAL Seamless is available in a complete range of diameters, wall thicknesses, various shapes and steel analyses. It won't cost you anything to find out. Write to National Tube Division, United States Steel, 525 William Penn Place, Pittsburgh 30, Pa. Or, for Shelby Seamless Tubing, contact your nearest Shelby Distributor.

USS, National, and Shelby are registered trademarks

"WALLS WITHOUT WELDS," a technicolor, sound film on the manufacture of National Seamless Pipe and Tubes is available free of charge to industrial groups, clubs, school groups, etc. Write for information.

Seamless Pipe and Tubes



TEXAS TOWER This man-made radar island stands on giant stilts 110 miles at sea off the North Atlantic coast. An important segment in our country's defense against surprise attack, the $13,000,000 Texas Tower is the first of five such "plane watcher" stations now under construction. Thousands of feet of NATIONAL Seamless Pipe have been installed in the tower—for steam piping, chilled water piping, fuel oil piping, and compressed air. Tough, strong, uniform NATIONAL Seamless Pipe is specifically designed to withstand high pressures and temperatures—for every length must pass a rigorous hydrostatic test. Every tube has the strength of a solid forging.

Piping installed by Wallace Process Piping Company, Inc., Norfolk, Va., as subcontractors to Steers-Morrison-Knudsen, Inc., New York City and Continental Copper and Steel Industries, Inc., New York City.

National Tube Division of USS United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors • United States Steel Supply Division • United States Steel Export Company, New York

there's so much to choose from at...

HOTEL CLEVELAND

Cleveland Room
Dine in the splendid old world setting of a grand dining room. The menu is varied, the service unexcelled.

Bronze Room
One of the brightest of the city's supper clubs. Dancing nightly from 9:00 p.m.
Air conditioned, of course.

Rib Room
A true specialty restaurant For Fabulous Roast Beef, roasted, carved and served to your order.

MEN'S BAR
Strictly stag — is this all male haven for good drinks, good food and good talk. Plus sports events on TV.

TRANSIT BAR
For *rapid* service in the most unique bar in the country . . decorated with an outstanding collection of miniature trains.

the PATIO
Pause — in the relaxing, informal atmosphere of the gayly decorated Patio. It's a Cleveland habit to say — "Meet me at the Patio."

Coffee Shop
Service is brisk and decor cheerful in the modern, air-conditioned coffee shop. Enjoy a tasty sandwich or a moderately priced meal.

HCA Hotel Cleveland
CLEVELAND, OHIO

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How to breathe new life into your old presses . . .

Modernize! Replace the old, outdated features on your presses with brand new factory-engineered assemblies. New clutches, new slide adjustments, new bearings—these are only three of the 12 Bliss modernization assemblies you can add right in your own plant, keeping downtime and outside costs to a minimum. You can add important new press features to your old press at a fraction of the cost of a new press!

When modernizing won't do the job . . . consider *rebuilding*. We've rebuilt presses 20 years old and older—*restored them to their original efficiency!* We replace and refit all wearing surfaces . . . replace worn and outdated parts . . . put your press back together to its original tolerances. And we *guarantee* it.

Which is better—to rebuild or modernize? It depends upon the press and what you want it to do. Your local Bliss man will be glad to give you the facts.

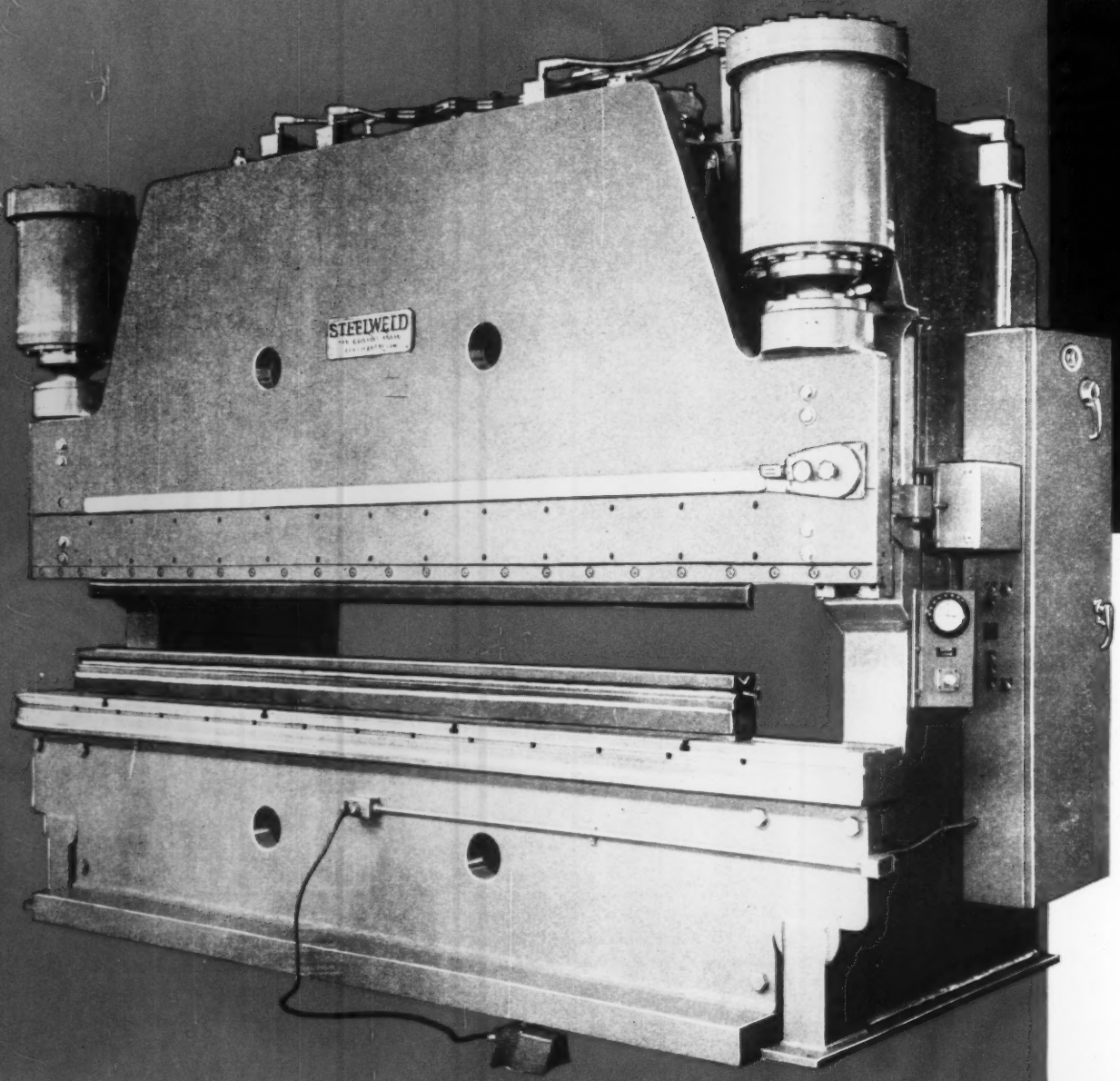
BLISS
SINCE 1857 ®

E. W. BLISS COMPANY · Canton, Ohio

BLISS is more than a name . . . it's a guarantee

PRESSES • ROLLING MILLS • ROLLS • DIE SETS • CAN MACHINERY • CONTRACT MFG.

Introducing a



Write today:

Ask for free copy of Catalog No. 2024A

NEW LINE of

STEELWELD HYDRAULIC PRESS BRAKES

Capacities to 2000 Tons

- **Positive overload protection.**
- **Constant power during entire stroke.**
- **Ram reversible at any point.**
- **Stroke quickly adjusted for any length.**
- **Fast ram approach and return—slow-speed pressing.**
- **Operating pressure simply adjusted.**
- **Accurate ram level automatically maintained.**
- **Ram easily tapered.**
- **Simple, safe to operate.**

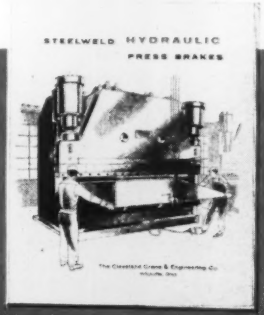
CLEVELAND CRANE is proud to present its completely new series of Steelweld Hydraulic Press Brakes for bending mild steel from 10 gauge to 2 inches and in lengths to 30 feet.

Heavily built and of finest quality throughout, the machines are of the most advanced design with all features found desirable for ease of operation, maximum production and outstanding performance.

Steelweld hydraulically operated brakes are versatile machines capable of handling a wide variety of operations. They are ideal for jobbing shops, as well as for mass-production work. They work to close tolerances and have ample speed.

The new line of hydraulic brakes supplements the Steelweld line of mechanical press brakes, which Cleveland Crane has been building for more than 25 years, but does not supplant it. Each type of machine has its advantages and careful consideration must be given to the specific application to determine the type and size machine most suitable.

We urge you to get the facts on these new machines that have so much to offer you. Our sales engineers will be glad to give you the details. Or write for our new catalog below.



STEELWELD PRESSES

THE CLEVELAND CRANE & ENGINEERING CO.

7869 EAST 281 STREET, WICKLIFFE, OHIO

STEEL PROTECTS STEEL IN TRANSIT

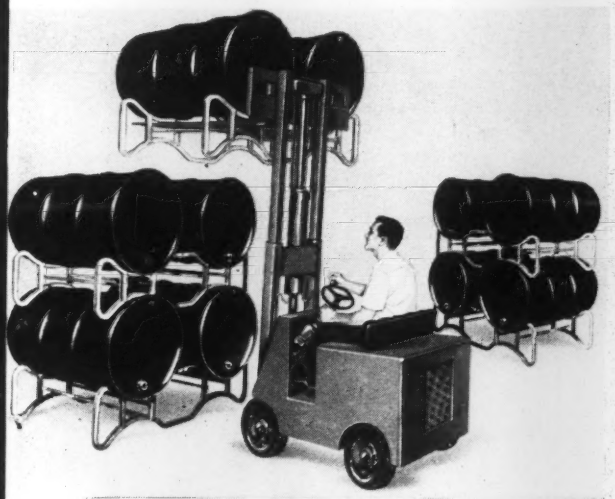
Republic's Berger Division has developed and is producing steel gondola car covers to provide damage-free shipping of rolled steel in coils.

The covers afford excellent weather protection, shut out dirt, stop vandalism, eliminate costly replacement of short-lived tarpaulins. Coil users also benefit by eliminating the need for paper wrappings on coils. Another cost-saving advantage is the fact that larger coils can be shipped in specially fitted cars.

Republic Gondola Car Covers are supplied 22 feet long, 6 feet wide, and 6 feet high. Two covers are used with each 52-foot long gondola car. The covers are easily handled by overhead or trackside crane.

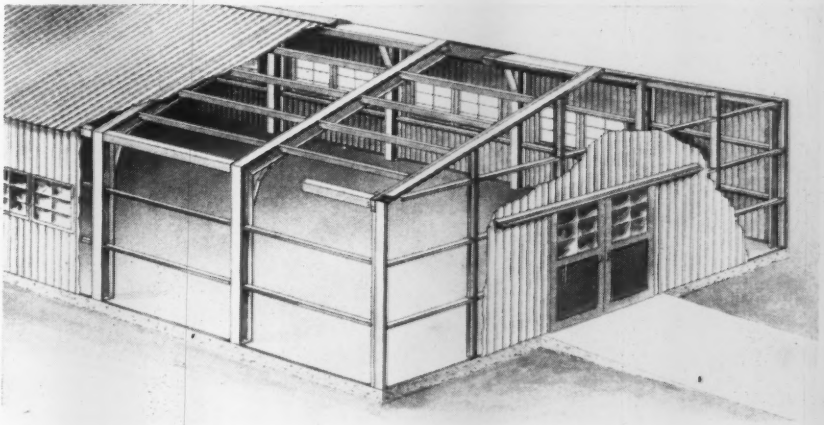
Six specially designed stacking brackets are firmly attached to each cover to permit tiering during loading or unloading operations. Corrugated steel construction of the covers provides added strength, assures long service life at lowest per-year cost.

Obtain the best possible protection for rolled steel in coils and at the same time reduce your costs. Request that your coil shipments be protected by Republic Gondola Car Covers. Mail the coupon for complete information.



NEW PORTABLE DRUM RACK. ANOTHER REPUBLIC EXCLUSIVE. Now, more in-use drums can be accommodated in less floor space than ever before. These steel cradles each support two loaded 55-gallon drums, permit orderly stacking of pairs of drums to any practical height. Any standard fork-lift truck can pick up, move, and stack as many tiers of drums at one time as capacity permits. Low in cost. See your Republic materials handling equipment dealer, or send coupon.

NEW SLOTTED CONSTRUCTION ANGLE MEETS ALL YOUR FRAMING NEEDS. It's Republic METAL LUMBER®, Republic's Berger Division's slotted construction angle. Use this versatile, durable product for racks, catwalks, scaffolds, special purpose tables and stands. Simply plan your assembly, cut it, join with bolts. Horizontal and vertical slots on ¾" centers make adjustment easy. Republic METAL LUMBER is BONDERIZED and finished with baked enamel after fabrication. Comes in convenient bundles of 10 angles, in .080 gage or .104 gage, 10- or 12-foot lengths, bolts and nuts included. Stores in same space as one 2" x 4" piece of lumber. Send the coupon for catalog loaded with ideas.



NEW COMPLETE STEEL "BUDGET BUILDINGS" are low in cost, quickly erected, reusable. These new "Budget Buildings" by Republic's Truscon Division bring the cost of additional storage space down low. Simplified design permits fast on-site erection. No painting needed. Siding, roofing, doors, windows, hardware all included. Immediate delivery in widths 32, 36, 40, 44, and 48 feet . . . 12- and 14-foot heights. Lengths as long as you want them. Send coupon for bulletin covering complete facts.

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL CORPORATION
DEPT. ST-6375
1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

Send more information on:

☐ Gondola Car Covers
☐ Republic METAL LUMBER
☐ Portable Drum Racks
☐ Truscon "Budget Buildings"

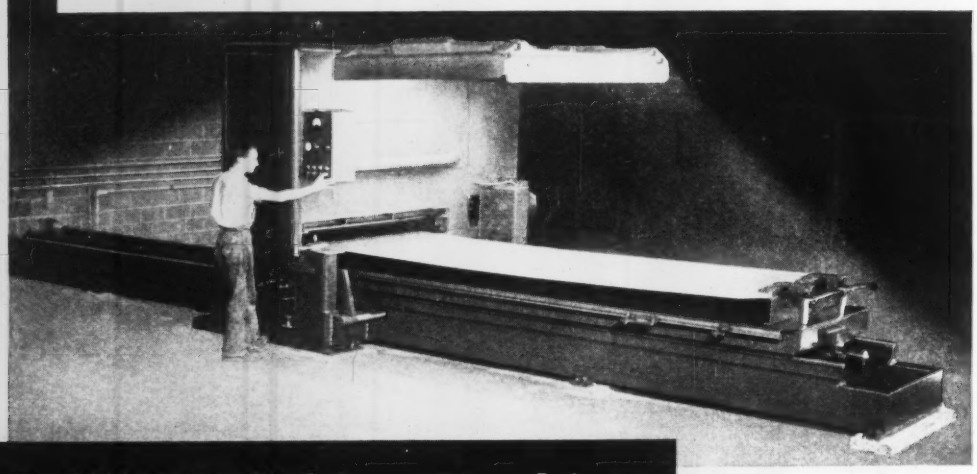
Name _____ Title _____

Company _____

Address _____

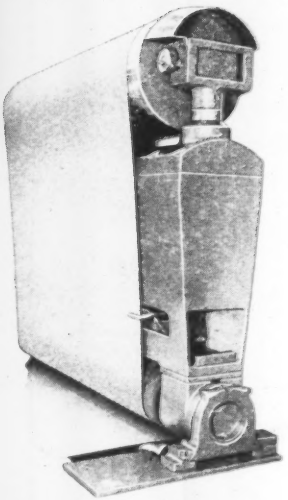
City _____ Zone ____ State _____

HILL Sheet and Plate polishing machine with reciprocating hydraulic table and vertical two roll head.

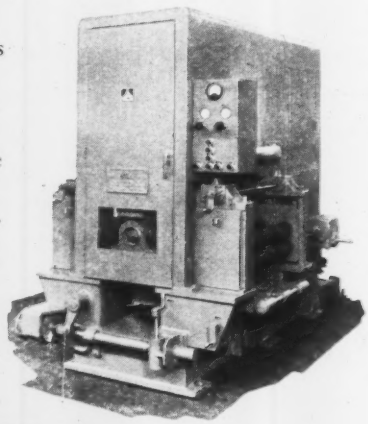


A HILL Polishing Machine of *YOUR OWN* will afford you important savings...

- *By eliminating mill extras.*
- *By proper finishing and prepolishing before forming.*
- *By enabling you to prepare the correct surface finish to meet each individual job need.*



● HILL polishing machines are now saving important percentages for manufacturers supplying the dairy and sanitation fields, for automobile bumpers, engravers plates and a wide variety of other industries.



HILL Pinch Roll type with vertical two roll head for polishing strip. Can be used singly or in multiple units for line production.

IT'S MOSTLY IN THE HEAD

Two rolls accurately controlled for speeds and pressures with easy adjustment for proper tension of the endless abrasive belt. For fine finishing of all types of ferrous and non-ferrous metals.

HILL ACME TOOLS FOR INDUSTRY

The HILL ACME Company

1207 W. 65th STREET • CLEVELAND 2, OHIO

"HILL" GRINDING & POLISHING MACHINES • HYDRAULIC SURFACE GRINDERS • ALSO MANUFACTURERS OF "ACME" FORGING THREADING • TAPPING MACHINES • "CANTON" ALLIGATOR SHEARS • BILLET SHEARS • "CLEVELAND" KNIVES • SHEAR BLADES

CALENDAR
OF MEETINGS

Oct. 13-15, American Institute of Electrical Engineers: Machine tool conference, Statler-Hilton Hotel, Hartford 3, Conn. Institute's address: 33 W. 39th St., New York 18, N. Y. Secretary: N. S. Hibshman.

Oct. 13-15, National Electronics Conference Inc.: Annual meeting and exhibit, Sherman Hotel, Chicago. Conference's address: 84 E. Randolph St., Chicago 1, Ill. Executive secretary: John S. Powers.

Oct. 13-16, Wire Association: Annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J. Association's address: 453 Main St., Stamford, Conn. Executive secretary: Richard E. Brown.

Oct. 13-17, American Society of Civil Engineers: Annual meeting, Statler-Hilton Hotel, New York. Society's address: 33 W. 39th St., New York 18, N. Y. Executive secretary: William H. Wisely.

Oct. 14-15, Wire Reinforcement Institute Inc.: Annual fall meeting, Park Plaza Hotel, St. Louis. Managing director: Frank B. Brown.

Oct. 14-16, Society of Industrial Packaging & Materials Handling Engineers: Annual meeting and industrial packaging and handling exposition, Chicago Coliseum, Congress and Morrison Hotels, Chicago. Information: Hanson & Shea Inc., 1 Gateway Center, Pittsburgh 22, Pa.

Oct. 15-17, American Machine Tool Distributors Association: Annual meeting, Sheraton-Plaza Hotel, Boston. Association's address: 1900 Arch St.; Philadelphia 3, Pa. Executive secretary: Thomas A. Fernley Jr.

Oct. 16-17, Magnesium Association: Fall meeting and exhibit, Fort Shelby Hotel, Detroit. Association's address: 122 E. 42nd St., New York 17, N. Y. Secretary: Jerry Singleton.

Oct. 16-18, Foundry Equipment Manufacturers Association Inc.: Annual meeting, Greenbrier, White Sulphur Springs, W. Va. Association's address: 1 Thomas Circle, Washington 5, D. C. Secretary: C. R. Heller.

Oct. 18-21, American Society of Industrial Designers: Annual design conference, Bedford Springs Hotel, Bedford, Pa. Society's address: 15 E. 48th St., New York 17, N. Y.

Oct. 18-21, Conveyor Equipment Manufacturers Association: Annual meeting, Greenbrier, White Sulphur Springs, W. Va. Association's address: 1 Thomas Circle, Washington 5, D. C. Executive vice president: R. C. Sollenberger.

Oct. 19-21, National Metal Trades Association: Eastern plant management conference, Berkshire Inn, Great Barrington, Mass. Association's address: 337 W. Madison St., Chicago 6, Ill. Secretary: Charles L. Blatchford.

When you need 52100 steel bars and tubes go direct to Peterson....world's largest stocks. NOTE: For better machineability specify *leaded* bars.

52100

ONE WAY

PETERSON

STEELS, INC.

Union, New Jersey • Detroit, Michigan • Chicago, Illinois

production: 10,000,000 cuts
maintenance cost: $896.00

This Cincinnati Shear has been in constant service for ten years, cutting 18-gauge corrugated sheet, 1010 draw quality, for a prominent heating equipment manufacturer at an average rate of 4000 cuts a day. That adds up to more than a million strokes per year—or 10,000,000 strokes in ten years.

Accuracy has always been excellent. The machine has been "down" *only for blade changes.* Special blades are used in this operation, to eliminate distortion of the corrugations.

Cost of machine maintenance, including blade resharpening, has been $896.00 for the entire ten years. "This," says their production manager, "to my way of thinking, is very good performance." We agree. Yet this is not exceptional. Every Cincinnati Shear is built to provide this kind of dependability and low maintenance, and we have hundreds of case histories to prove the point.

Specify Cincinnati for all your shear requirements. Write Department C for Catalog S-7R.

Shapers / Shears / Press Brakes

THE CINCINNATI SHAPER CO.

Cincinnati 11, Ohio, U.S.A.

This lightweight "No Charge" spool is typical of Roebling's modern packaging methods that save customers time and money.

Are You Getting What You Pay For?

When you pay for HIGH QUALITY high-carbon wire, you want to be sure you get it. You do, when it is supplied by Roebling.

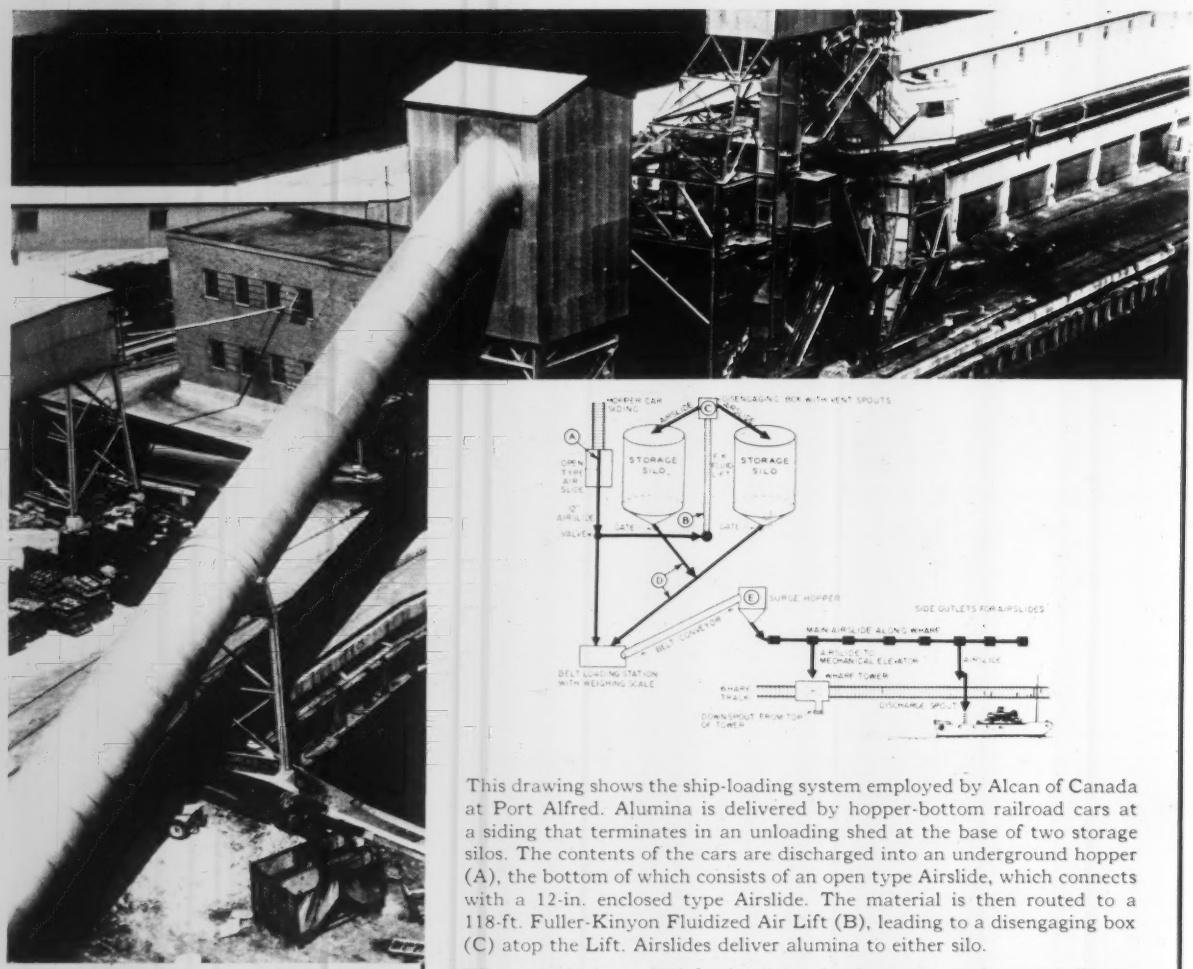
It is unsurpassed in quality, consistently true to specifications, and absolutely uniform in gauge. Hundreds of manufacturers attest to this fact . . . the qualities that they *pay* for—they *get* in Roebling high-carbon wire. The length of our relationship with customers proves it.

We'll be glad to show you what we mean. For information on superior high-carbon wire or cold rolled strip, write Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

ROEBLING

Branch Offices in Principal Cities—Subsidiary of The Colorado Fuel and Iron Corporation

Roebling... Your Product is Better for it



This drawing shows the ship-loading system employed by Alcan of Canada at Port Alfred. Alumina is delivered by hopper-bottom railroad cars at a siding that terminates in an unloading shed at the base of two storage silos. The contents of the cars are discharged into an underground hopper (A), the bottom of which consists of an open type Airslide, which connects with a 12-in. enclosed type Airslide. The material is then routed to a 118-ft. Fuller-Kinyon Fluidized Air Lift (B), leading to a disengaging box (C) atop the Lift. Airslides deliver alumina to either silo.

When a ship is readied for loading, alumina is drawn from the silos by open type Airslides and transported by means of 16-inch Airslides (D) to a belt, which delivers to a surge hopper (E) feeding the 400-ft. long Airslide for conveying to the ship. Air for the operation of the Fuller-Kinyon Fluid Lift is supplied by a Fuller Rotary Compressor.

Here's how ALCAN reduces ship loading time 50%

. . . FULLER SYSTEM PAID FOR ITSELF IN WEEKS

Expansion of The Aluminum Company of Canada's pneumatic conveying system at Port Alfred, Quebec, has cut ship loading time of alumina by 50 percent.

Engineered and built by Fuller, this pneumatic conveying system has eliminated frequent interruptions in the loading schedule and made possible big savings in handling cost. The initial cost of the installation was absorbed within the first few weeks of operation!

Additional equipment consists of two 35-ft. portable F-H Airslides® operating in tandem off of a main 19-in. Airslide running a distance of 400 feet along the roof of the wharf.

These Airslides discharge the alumina directly into the hold of the ship, eliminating the time-consuming shutdown during relocation of the bucket elevator and tower for delivery to various holds.

This carefully planned system points out how Fuller's more than 30 years of specialized experience in engineering and manufacturing pneumatic materials-handling equipment helped another company save time and money. We would like to put our facilities to work for you, too. Write, giving us details of your operations.

FULLER COMPANY GENERAL AMERICAN

Fuller

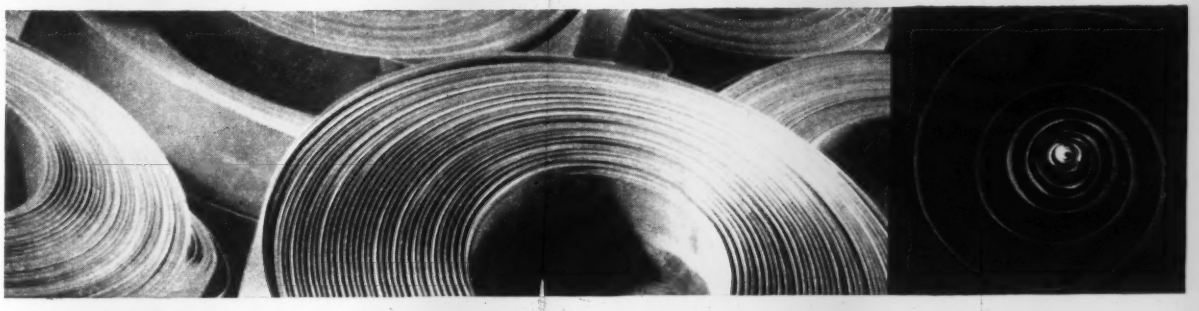
. . . pioneers in harnessing AIR

FULLER COMPANY

160 Bridge St., Catasauqua, Pa.

SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORPORATION

Birmingham • Chicago • Kansas City • Los Angeles • San Francisco • Seattle



How they're using

Wallace Barnes Cold-rolled Specialty Steels

1. *In Three Drawing Stations*

The part shown in illustration one was made from .59 – .74% carbon steel in three drawing stations. From .70 – .80% carbon, this piece should have four or five drawing stations. The piece could be made from .90 – 1.05% carbon, but would require seven drawing stations with fully annealed steel.

2. *Blanked on 45° Angle*

The stamping shown in the second illustration was made from .70 – .80% carbon spring steel. It was blanked and pierced on a 45° angle, with small holes pierced to prevent fracture in later forming and bending. It was then given severe secondary forming. The small tab shows "orange peel" and probable fracture would occur if the part were formed from .90 – 1.05% carbon.

3. *All Flanging One Operation*

Our third part is a gun stamping made from .70 – .80% carbon with a sharp bend with the grain in one stroke of the press. Higher carbon will fracture due to its less ductile qualities.

4. *Thirteen Steps Progressive*

The fastener shown in the fourth illustration was made from the .59 – .74% carbon steel, the only spring steel which would take the bends and draws to which it is subjected here. All the higher carbon steels were rejected because they failed under the cold-work necessary to produce the two small extrusions. It took seven reductions to bring these extrusions within tolerance. There were thirteen steps total in the progressive die.

These examples show how proper steel selection may save operations and insure satisfactory performance. Among the many sizes and types of Wallace Barnes cold-rolled specialty steels is the right one for your application. Send for "Physical Property Charts" giving tensile strength and forming properties of Wallace Barnes tempered steels.

Wallace Barnes Steel Division

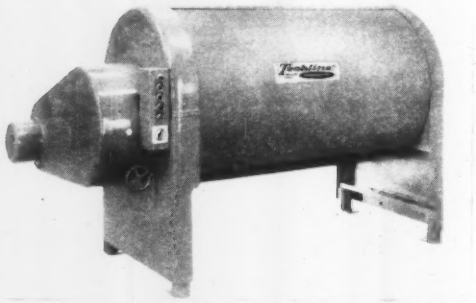
Bristol, Connecticut

Associated Spring Corporation

5808

NEW

NEW TECHLINE DIVISION IS



TECHLINE BARREL FINISHING EQUIPMENT includes a complete line of single and multiple-compartment machines. Because of their exclusive "modular" design, they are unusually economical, and available in almost endless combinations of size and capacity to meet all production requirements.

from WHEELABRATOR®

Techline*

*TRADE MARK

PRECISION FINISHING EQUIPMENT

for both Barrel Finishing and Wet Blasting Processes

WHEELABRATOR CORPORATION

world leader in airless blast cleaning

proudly introduces

Techline*

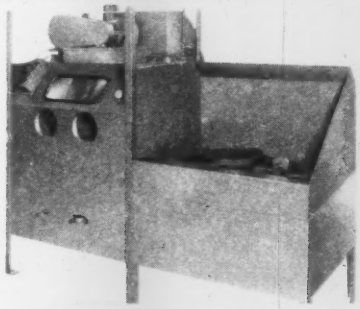
its new precision finishing division, specializing in equipment and supplies for both the barrel and wet blast processes.

FIRST TO OFFER COMPLETE PRECISION FINISHING SERVICE

Roy T. Romine, Chief Engineer

George H. Lieser, Field Sales Manager

Lee D. Stevens, Director of Process Engineering and contract finishing services.



TECHLINE WET BLASTING MACHINES add the new "modular" concept of design to the famous Wheelabrator Liquamatte features, achieving new standards of economy and performance for wet blast precision cleaning and finishing. Standard units are available in a wide range of sizes and capacities.

Now, users of precision finishing equipment, for the first time, have a selection of equipment for *both* important processes of close-tolerance mechanical finishing, the barrel and wet blast methods, from one dependable source.

Through its new Techline Division, Wheelabrator Corporation offers a wide line of barrel finishing equipment, media and compounds, as well as the long-established Wheelabrator Liquamatte line of wet blast equipment and Liquabrasives.

Because Techline equipment and services are not limited to just one process, its application engineers can be purely objective in recommending the one best combination of process and equipment for your precision finishing needs.

Techline design engineers are specialists in precision finishing, with long experience in designing equipment and planning efficient processing operations. Their designs include many exclusive features that are far ahead of any similar machines now available. And Techline offers a complete range of media, compounds and abrasives, all carefully selected and accurately formulated to consistently produce the finish you specify.

Techline's modern research and testing facilities are at your service. Their application engineers will analyze your finishing problem and process samples of your work, to determine the most effective and economical combination of process, equipment and abrasive for you to use.

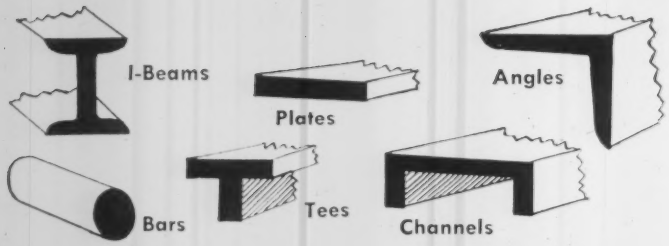
This service is available to you without charge or obligation. Write for full information on Techline application engineering services.

Techline* *TRADE MARK

division of **WHEELABRATOR** CORPORATION

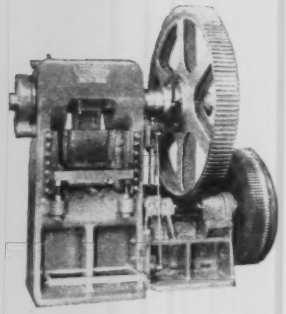
Where precision finishing is a science

2451 AVENUE V., VICKSBURG, MICHIGAN

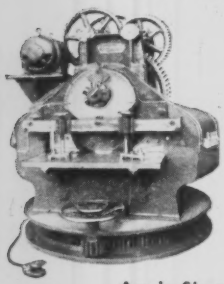


If you bend, roll, shear, punch, plane or straighten any of these shapes of metal— save time and money with

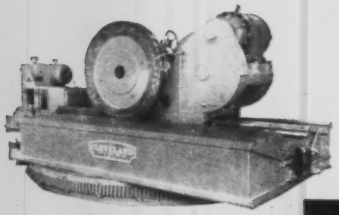
CLEVELAND
FABRICATING TOOLS



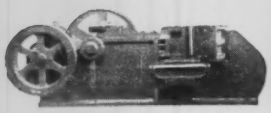
Bar Shears



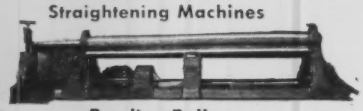
Angle Shears



Rotary Planers



Bending and Straightening Machines



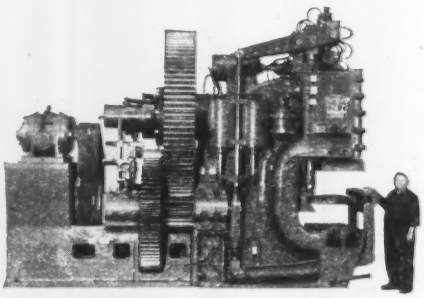
Bending Rolls

Simple to operate, ruggedly built, Cleveland Fabricating Tools are designed for efficient, trouble-free operation and years of service.

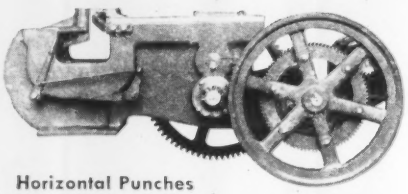
Leading shipyards, railroads, bridge builders, boiler makers, and other structural steel and heavy plate fabricators have proven the dependable, economical performance of Cleveland Fabricating Tools.

Since 1880, Cleveland has engineered its complete line of fabricating tools to be the finest, most efficient for punching, shearing, bending, rolling, straightening, planing, coping and notching I-beams, tees, zees, channels, bars, rods and other structural shapes.

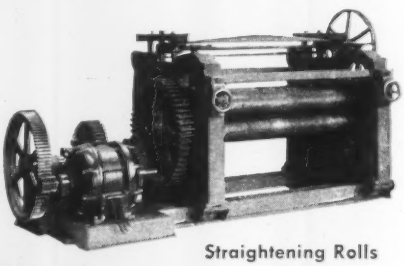
Write for Folder FT48 to help you determine the correct fabricating tool for your needs. AA-7191



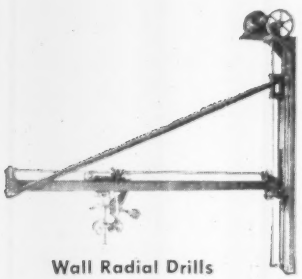
Vertical Open Gap Punching Machines



Horizontal Punches



Straightening Rolls



Wall Radial Drills

THE CLEVELAND PUNCH & SHEAR WORKS CO.
Established 1880

Power Presses
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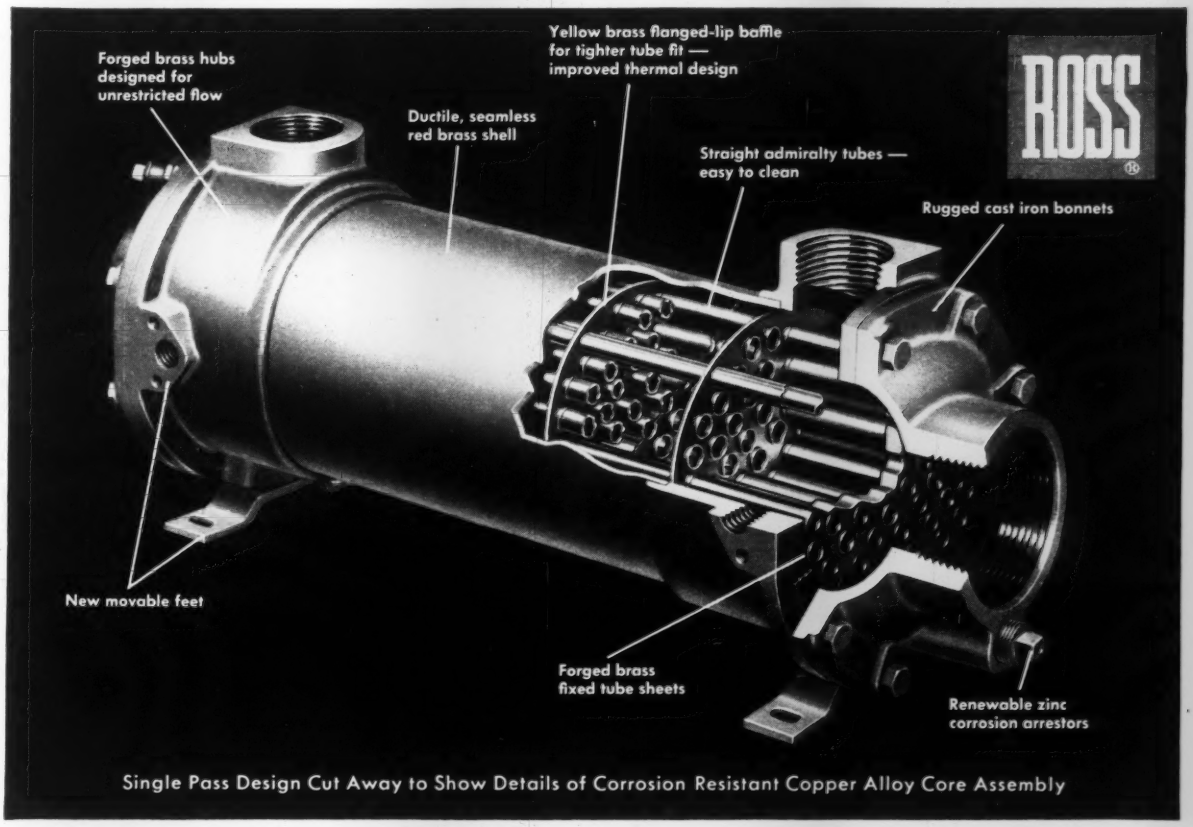
LOOK AT THE LEADER'S LATEST . . .

'58 design of a famous line . . . Ross BCF Exchangers


Forged brass hubs designed for unrestricted flow
Yellow brass flanged-lip baffle for tighter tube fit — improved thermal design
ROSS
Ductile, seamless red brass shell
Straight admiralty tubes — easy to clean
Rugged cast iron bonnets
New movable feet
Forged brass fixed tube sheets
Renewable zinc corrosion arrestors

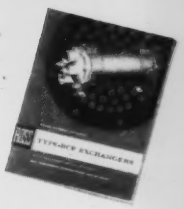
Single Pass Design Cut Away to Show Details of Corrosion Resistant Copper Alloy Core Assembly

LOOK AT THE LIST . . . new design features, new sizes, new capacities, new mountings, new materials . . . *new low prices!* In 1958 the leader and originator of small, compact, fully standardized exchangers takes another step forward.

The Ross Heat Exchanger Division of American-Standard originated the whole BCF idea 14 years ago. Before then, pre-engineered design, mass produced parts and stocked assemblies were untried for a unit of this type. Designers and users of original equipment were quick to adopt the BCF as standard. Today, on a larger scale than ever, it is cooling lube oil, jacket water, hydraulic and other fluids for a wide variety of industries.

But, even with such success, the BCF has never been permitted to stand still. Ross has persisted in making constant design refinements and performance improvements . . . *1958 is typical: New* baffles with flanged lip at each tube hole and around outer edge for tighter fit and improved thermal characteristics. *New* stamped steel feet, movable in three positions around hubs for easy, more adaptable mounting. *New* sizes and capacities . . . 46 models . . . one, two or four pass designs . . . giving greater selection than ever before.

Look at the leader's latest. Send in the coupon below for the new Ross Bulletin . . . an up-to-date run down on the 1958 Ross Type BCF Exchanger.



Mail this coupon for new Ross Bulletin

To: **American-Standard,** S
Ross Heat Exchanger Division
Buffalo 5, N. Y.

Please send, without obligation, your new Bulletin 1.1K6 describing the 1958 Ross Type BCF Heat Exchanger.

NAME _____

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CITY _____ ZONE _____ STATE _____

American-Standard PRODUCTS

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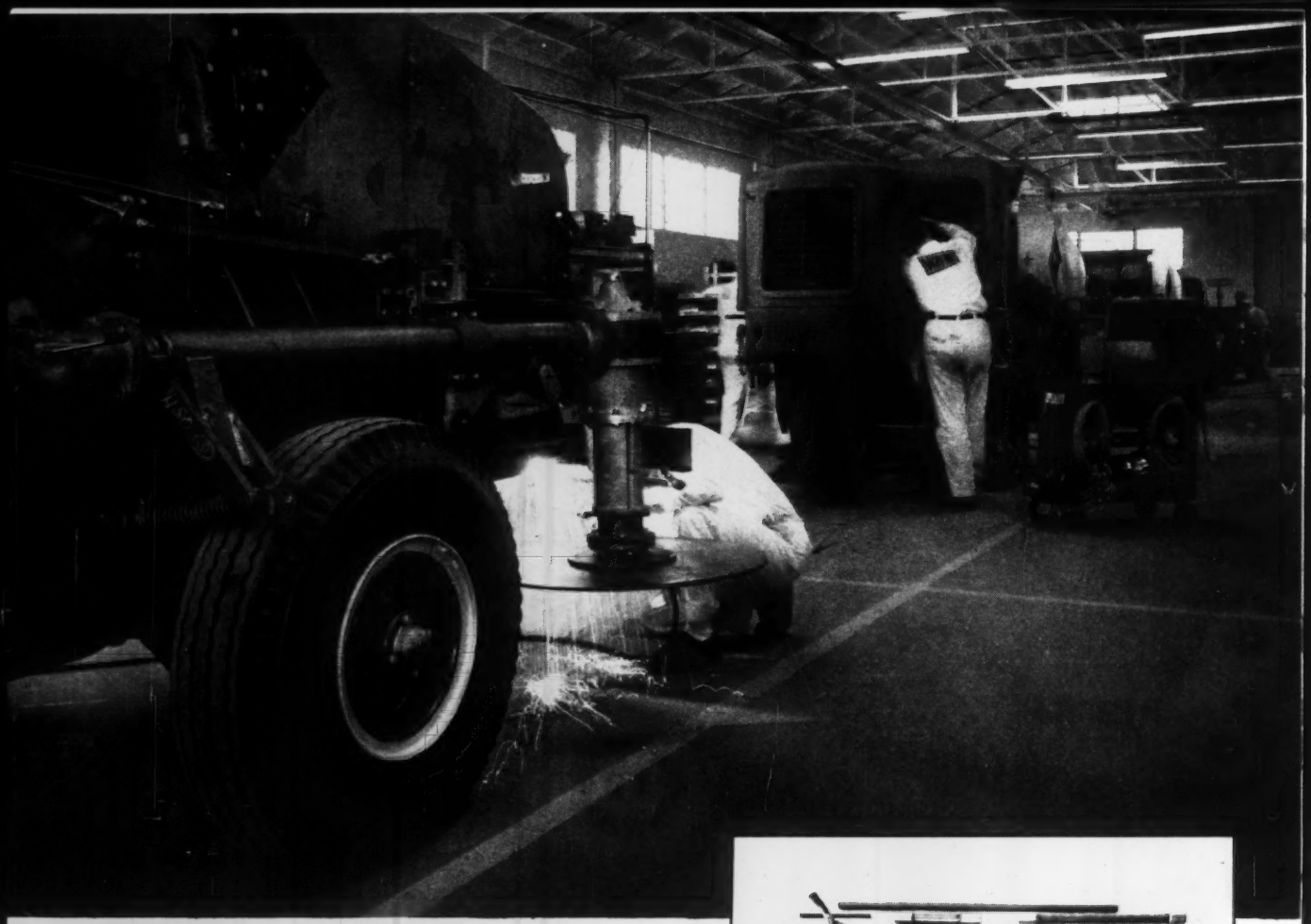
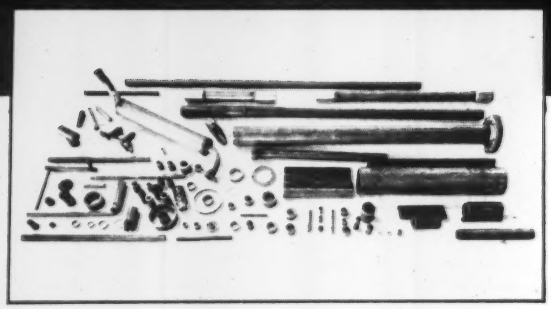
ROSS HEAT EXCHANGER DIVISION





Seven-million miles of street and industrial sweeping in 700 cities have proved rugged dependability of Wayne Manufacturing Company's equipment. Here is the final assembly line in its plant. Large horizontal tube on sweeper is jack shaft housing for gutter broom drive. Wayne makes 300 parts from Pittsburgh Steel's Seamless cold-drawn tubing (see inset at right). That's how . . .

Pittsburgh Steel Seamless Tubes Help Wayne Make Clean Sweep

Nobody knows how many brooms it would take to keep the world clean. But out in Pomona, California, Wayne Manufacturing Company is ready to tackle the job with a complete line of power sweepers.

Founded only ten years ago, the Wayne Company has grown rapidly until today it produces more street and industrial power sweepers than all others in the field combined. Wayne is the only power sweeper produced by assembly-line operation.

Largest Wayne sweepers handle up to four cubic yards of debris at a time. Their assembly requires more than 1,000 complicated and accurately manufactured steel parts.

• **300 Key Parts**—Of these, more than 300 key items are fabricated from Pittsburgh Steel Company's Seamless Tubing in both carbon and alloy grades in sizes ranging from one-quarter inch to six inches in diameter. It is furnished cut to length and ready for fabrication by Baker Steel & Tube Company of Los Angeles, a Pittsburgh Steel distributor.

This service helps speed Wayne production, keeps inventories down and is typical of service rendered by all Pittsburgh distributors.

"Requirements for the parts produced from Pittsburgh tubing are exacting," says Wayne production vice-president, Roy E. Nelson. "Our sweepers are doing big jobs, many of them operating on a 24-hour schedule, and we

must have a tough, dependable product in the critical spots to take this constant heavy beating."

That is why Wayne uses Pittsburgh Seamless Tubing in critical components such as rugged axle assemblies, torque housings, drive shafts, hydraulic actuating cylinders—even small fittings.

Over the years, Wayne production men have found Pittsburgh tubing has the surface finish, close size tolerance and concentricity which minimize the amount of machining that must be done. Its uniformly high physical properties and internal soundness provide the stamina necessary for long, trouble-free service.

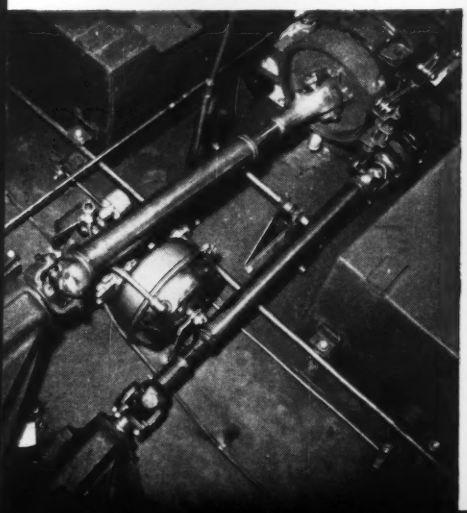
• **Ease of Fabrication**—The machinability and weldability of Pittsburgh tubing make for ease of fabrication, keep scrap losses down, and assure uniform parts—all important factors in keeping production lines moving smoothly.

As an aid to industrial good housekeeping, Wayne produces smaller power sweepers for use inside and outside plants. Its newest line is the Autoette series which includes the glamorous "Golfmobile" and the family "Cruise About." Three industrial models provide efficient transport of personnel and materials in sprawling plants.

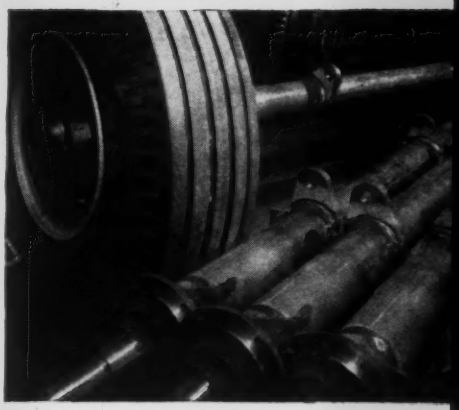
These industrial sweepers and Autoettes also depend upon Pittsburgh Steel tubing for parts in key assemblies.

Manufacturers find the uniformly high quality of Pittsburgh cold-drawn steel seamless tubing and excellent service from Pittsburgh distributors are big assets in improving products and operating efficiency. To enjoy these benefits get in touch with the representative nearest you.

Pittsburgh tubes withstand torque and fatigue in main and auxiliary drives on Wayne sweepers.



Machinability and weldability of Pittsburgh tubes are vital in making this shaft which goes into differential assembly. Short tube is welded over longer, smaller diameter tube, then machined to tolerance of .001 inch to assure perfect fit in housing.



Rugged front axle assembly of Wayne sweeper made from Pittsburgh tubes carries most of weight of machine and up to four cubic yards of debris. It must withstand road shocks and constant heavy-duty operation.

Pittsburgh Seamless Distributors

Baker Steel & Tube Company
Los Angeles, California

Chicago Tube & Iron Company
Chicago, Illinois

Cleveland Tool & Supply Co.
Cleveland, Ohio

Drummond McCall & Co., Ltd.
Montreal, Quebec, Canada

Edgcomb Steel Company
Philadelphia, Pennsylvania

Gilmore Steel & Supply Co.
San Francisco, California

Earle M. Jorgensen Co.

Perry Kilsby, Inc.
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Mapes & Sprowl Steel Co.
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Metal Goods Corporation
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Miller Steel Company, Inc.
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Solar Steel Corporation
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All or portions of the above installations are available for use for commercial purposes. Possible uses are unlimited.

Facilities: Oleum plants (sulphuric acid); nitric acid; acid concentration; ether still; nitrocellulose; various explosive manufacturing; organic chemical manufacturing; steel foundries; heavy and light manufacturing; loading and assembling; offices; warehouses; power plants; storage tanks; many other facilities.

Transportation: Rail and highway facilities are available to these installations, including intra-plant rail and road systems.

Utilities: All necessary utilities are available.

Labor: There is a surplus of both skilled and unskilled labor in the immediate vicinity of most plants.

Detailed information, arrangements for inspections, invitations for proposals and sample form of lease may be obtained from the U. S. Army Division Engineer having jurisdiction over the area in which you are interested. The addresses of the Divisions Engineers are:

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Omaha, Nebr.

OHIO RIVER
PO Box 1159
Cincinnati, Ohio

NORTH ATLANTIC
90 Church St.
New York 7, N. Y.

SOUTH ATLANTIC
PO Box 1889
Atlanta, Georgia

NORTH CENTRAL
536 So. Clark St.
Chicago 5, Ill.

SOUTH PACIFIC
PO Box 3339
Rincon Annex
San Francisco, Calif.

SOUTHWESTERN: 1114 Commerce St., Dallas, Texas

MISSOURI RIVER
1. Cornhusker Ordnance Plant, Grand Island, Nebr.
2. Iowa Ordnance Plant, Burlington, Iowa
3. Kansas Ordnance Plant, Parsons, Kansas
4. Lake City Arsenal, Independence, Mo.
5. Nebraska Ordnance Plant, Wahoo, Nebr.
6. Rocky Mountain Arsenal, Denver, Col.
7. St. Louis Ordnance Plant, St. Louis, Mo.
8. St. Louis Ordnance Steel Foundry, St. Louis, Mo.
9. Sunflower Ordnance Works, Lawrence, Kansas

NORTH ATLANTIC
1. Birdsboro Ordnance Steel Foundry, Birdsboro, Pa.
2. Burlington Ordnance Plant, Burlington, N. J.
3. Edgewood Arsenal, Edgewood, Md.
4. Ordnance Assembly Plant, Edgewood, Md.
5. Radford Arsenal, Radford, Va.

NORTH CENTRAL
1. Badger Ordnance Works, Baraboo, Wisc.
2. East Chicago Ordnance Steel Fdy., East Chicago, Ind.
3. Joliet Arsenal, Joliet, Ill.
4. Kingsbury Ordnance Plant, La Porte, Ind.
5. Twin Cities Arsenal, New Brighton, Minn.
6. Wabash River Ordnance Works, Newport, Ind.

OHIO RIVER
1. Coraopolis Ordnance Steel Foundry, Coraopolis, Pa.
2. Indiana Arsenal, Charlestown, Ind.
3. Jefferson Proving Ground, Madison, Ind.
4. Lima Ordnance Steel Foundry, Lima, Ohio
5. Marshall Plant, New Martinsville, W. Va.
6. Ravenna Arsenal, Apco, Ohio
7. Ridgewood Ordnance Plant, Cincinnati, Ohio

SOUTH ATLANTIC
1. Alabama Ordnance Works, Childersburg, Ala.
2. Holston Ordnance Works, Kingsport, Tenn.
3. Milan Arsenal, Milan, Tenn.
4. Phosphate Development Works, Sheffield, Ala.
5. Volunteer Ordnance Works, Tyner, Tenn.

SOUTH PACIFIC
1. Pacific Ordnance Steel Foundry, Pittsburg, Calif.
2. Riverbank Ordnance Plant, Riverbank, Calif.

SOUTHWESTERN
1. Lone Star Ordnance Plant, Texarkana, Texas
2. Longhorn Ordnance Works, Karnack, Texas
3. Louisiana Ordnance Plant, Shreveport, La.
4. Oklahoma Ordnance Works, Pryor, Okla.
5. Pantex Ordnance Plant, Amarillo, Texas

CORPS OF ENGINEERS, U.S. ARMY

DIRECT

At end of cut, operator spins speed selector handwheel to new setting. Hydraulic power shifts gears while operator indexes turrets and repositions tools for next cut. There is no waiting, no stopping of spindle, no releasing of clutch.

PRE-SET

While machining is being performed, operator sets speed selector on desired speed for next cut. When ready to change, he simply taps Hi-Lo lever to initiate shift, and is free to index and ready tools for next cut.

HI-LO

During either direct or pre-set operation, operator can reduce speed instantly in 8:1 ratio on Ram Type and 6:1 ratio on Saddle Type Turret Lathes by depressing Hi-Lo lever. Ideal when going from drilling, turning or boring to threading, forming or reaming. Raising Hi-Lo lever returns spindle to original speed.

No computing. Operator rotates knurled dial until desired surface speed shows in window. Then he aligns work diameter number with Hi-Lo lever to obtain correct spindle speed.

WHY WAIT LONGER?

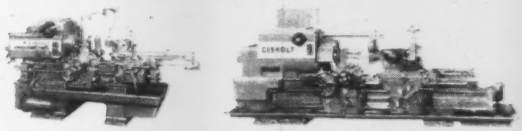
Get fast, smooth, effortless speed changes with Gisholt Hydraulic Speed Selector

A turn of this handwheel can influence your profit picture.

Offering a choice of pre-set or direct operation, the Gisholt Hydraulic Speed Selector eliminates time lost waiting for gears to shift. Your operator does not stop the spindle to make speed changes—nor does he release the main drive clutch. All he has to know are his work diameters. This means he can select the right spindle speeds quickly, effortlessly, without lengthy computation.

Consider what this means to your manufacturing processes: Because it is so *easy* for your operator to change speeds, he is continually encouraged to use the most effective speed for every operation, on all diameters, for all materials. Maximum tool life and a finer finish are obtained. Secondary operations are minimized. And your operator doesn't have to work as hard.

The Hydraulic Speed Selector is typical of the many advanced features on the new Gisholt MASTERLINE Ram Type and Saddle Type Turret Lathes.



Hydraulic Speed Selector is standard feature on Gisholt MASTERLINE Ram Type Turret Lathes (up to 16 spindle speeds, up to 25 hp. single-speed driving motor) and on Gisholt MASTERLINE Saddle Type Turret Lathes (up to 24 spindle speeds, up to 75 hp. single-speed driving motor).

GISHOLT

MACHINE COMPANY

Madison 10, Wisconsin

ASK YOUR GISHOLT REPRESENTATIVE ABOUT FACTORY-REBUILT MACHINES WITH NEW-MACHINE GUARANTEE

Send new literature on MASTERLINE Turret Lathes, Ram ☐ Saddle ☐
Please have Gisholt representative call ☐

FOR MORE PROFITABLE INDUSTRIAL SELLING

marketing with . .

. . two-way communication

Industrial selling is *tougher.*

But, in the face of this, top management is calling for more sales at a profit.

Better marketing—total marketing—is the answer to moving more goods within industry.

That is why so many industrial companies are bringing research, production, engineering, finance and advertising into the closest coordination with selling. Profit from every sale results when you coordinate capacity to sell and capacity to produce.

This concept of marketing demands a strong program of good communication—*two-way communication.*

Communication *from* your market, to tell you what products are wanted and needed.

Communication *to* your market, to make the extra contacts you need to help salesmen defeat the problems of group buying patterns and turn more *calls* into *sales.*

Good communication *from* the market depends on your sources of information. You'll find practical, helpful information in MACHINE DESIGN's "Geographical Analysis of the Original Equipment Market"; AUTOMATION's "Confidential File"; FOUNDRY's "Foundry Industry Marketing Guide"; STEEL magazine's new book "Metalworking Markets in the U.S."; N.E.D.'s "How to Get Industrial Buying Action".

Consult your Penton man. He's interested in helping you get the results management wants—more industrial sales at a profit.

the PENTON publishing company

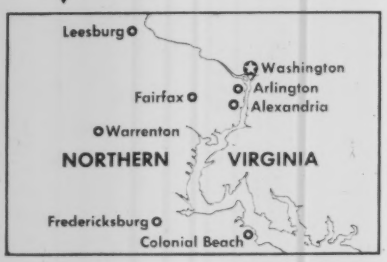
cleveland 13, ohio

AUTOMATION / FOUNDRY / MACHINE DESIGN / NEW EQUIPMENT DIGEST / STEEL

Electricity went to work early here

now it works harder than ever for your plant

NORTHERN VIRGINIA



With the click of Artist Morse's telegraph, amperes and volts ceased to be the playthings of natural philosophers. They went to work . . . and nowhere much earlier than in Northern Virginia. In 1847, one of the first telegraph lines in the world began its southward march in this key area.

Today, the electronics industry is finding a most congenial home here. So are many other light, or technical industries. And building ahead of their growth, Vepco's electric power network now has 640,000 kilowatts more generating capability under construction—to step up its total to 2,171,900 kw by 1960.

If you plan a plant or laboratory, consider the advantage of being close to the research facilities of the Nation's capital . . . in an area where the educational level of workers is 30% above the U.S. average. For more facts, or for confidential site-finding help in this land of mild climate, top transportation, friendly government, and delightful living . . . write, wire or phone Vepco, serving "The Top of the South" in Virginia, West Virginia and North Carolina.

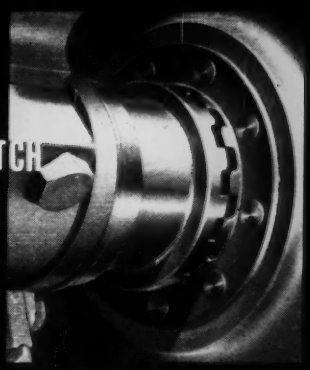
VIRGINIA ELECTRIC and POWER COMPANY

Clark P. Spellman, Director—Area Development, Electric Building, Richmond 9, Virginia • Phone: MIlton 9-1411

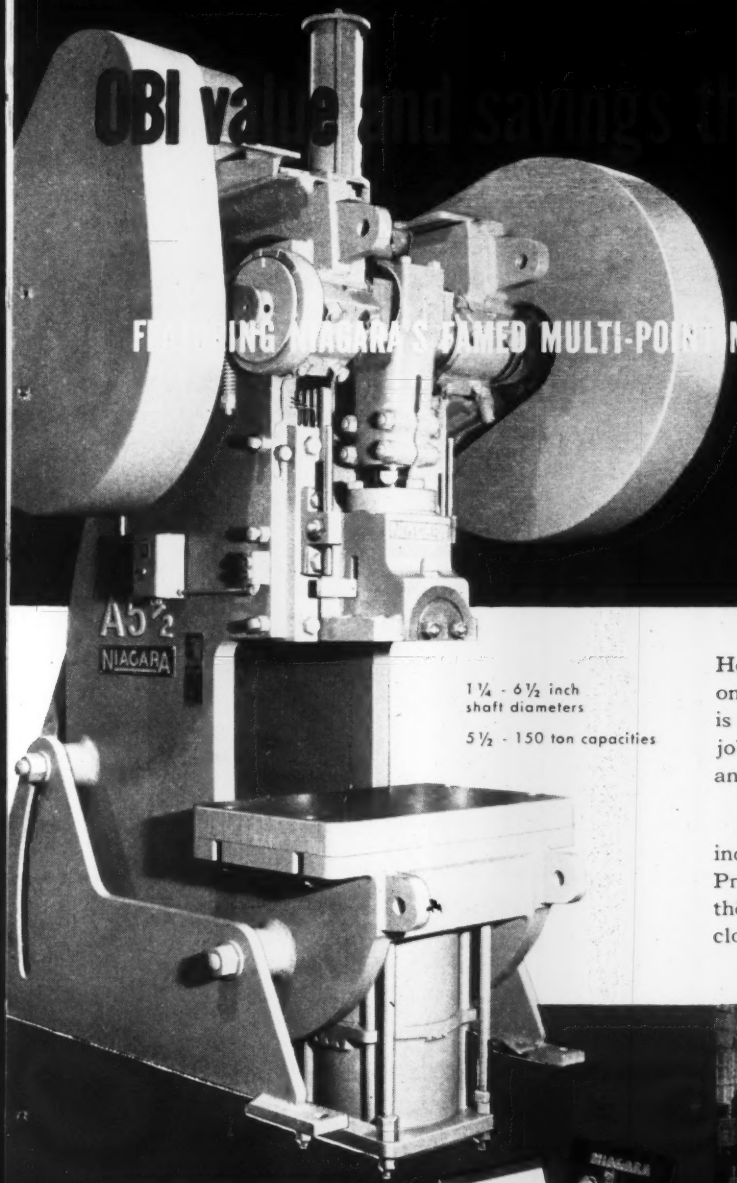
TON FOR TON . . . DOLLAR FOR DOLLAR

OBI value and savings that can't be matched

FEATURING NIAGARA'S FAMED MULTI-POINT MECHANICAL SLEEVE CLUTCH



Picks up load on 14 engaging jaws. Applies driving force concentrically without keys or pins. Assures instant engagement and maximum productive strokes per minute. Needs no air nor electricity. Practically no maintenance. Greater safety: Simplified controls, fewer parts to wear out. *Yes, it permits, inching, too.*



1¼ - 6½ inch shaft diameters

5½ - 150 ton capacities

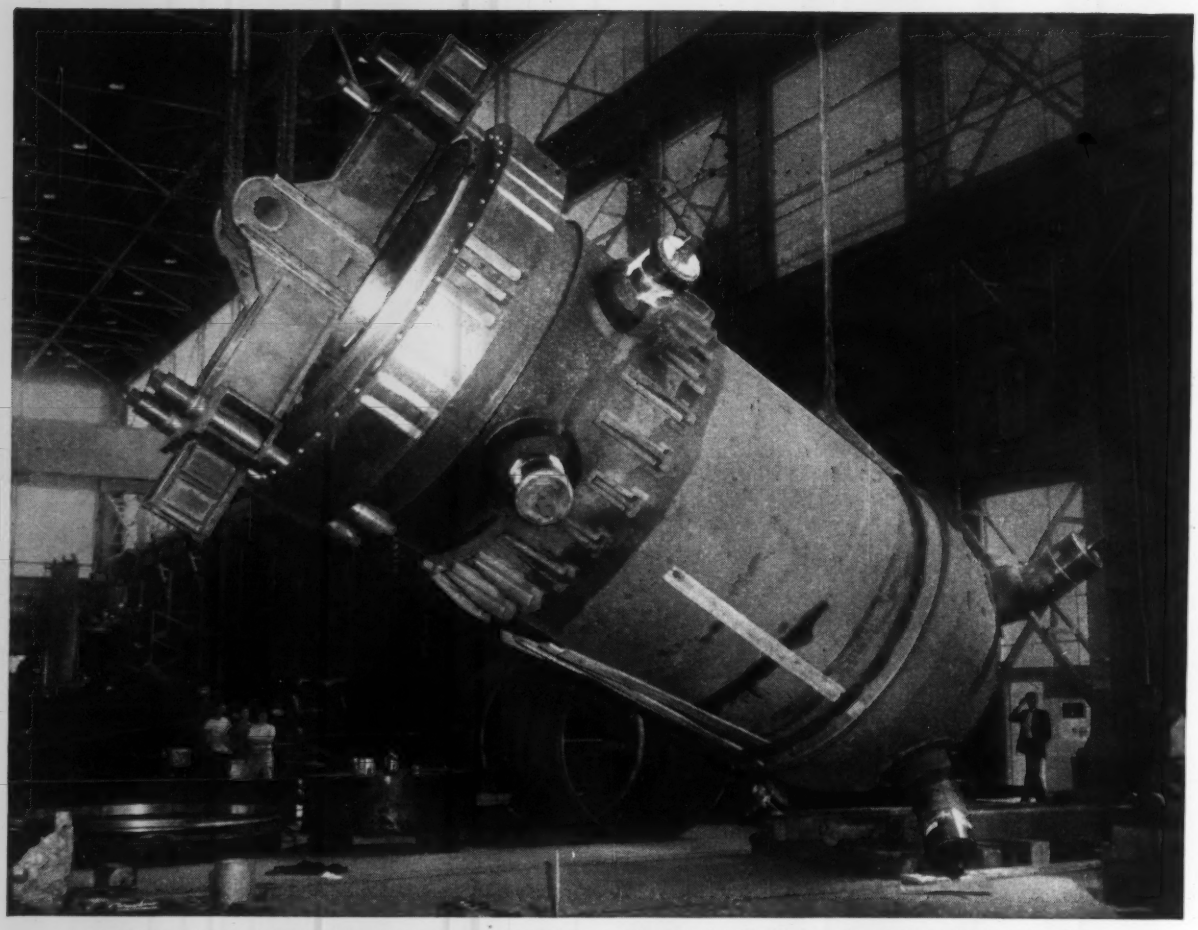
Here's a workhorse that's known for setting the pace on the most demanding jobs... jobs where the clutch is engaged and disengaged at every press stroke... jobs that call for operation three shifts a day, day in and day out.

Built and *backed* by a company which produces industry's greatest variety of inclinables*, Series A Presses have amassed an unusual success record in thousands of applications. To be specific, let's take a close look at a Series A user:

28 OBI'S SINGLE STROKED 707,140,000 TIMES WITHOUT ONE CENT SPENT ON CLUTCH ENGAGING SURFACES

GET THE FULL REPORT

NIAGARA (SERIES A) OBI PRESSES



Light from the atom. Electricity is now flowing from the first full-scale nuclear power plant in America. This 235-ton reactor vessel was designed and built with alloy steels and nickel alloys by Combustion Engineering, Inc. It supplies power for the 60,000 kilowatt Shippingport plant designed by Westinghouse Electric Corporation.

In Shippingport atomic reactor...

Inconel "X" keeps "hungry water" on a starvation diet

"Hungry water" is the apt name for high-purity coolant that whirls through the super-hot core of a nuclear reactor.

It tries to feed on anything it touches!

Its immoderate appetite explains why the reactor for America's first full-scale commercial nuclear power plant had to be designed and constructed as it was—*with core mount springs made of Inconel "X"* age-hardenable nickel-chromium-iron alloy.*

Other spring materials would relax long before operating temperatures hit their peak above 500°F. Or they might fail completely from what is called "stress-corrosion cracking", or embrittlement. In either event, it would be impossible to make repairs because of radioactivity.

It was this consideration that practically dictated the choice of Inconel "X" alloy. An exceptionally tough spring material, Inconel "X" alloy stands up to heat . . . corrosion . . . stress. In a lifetime of use, it's not expected to give "hungry water" a morsel of encouragement!

Have you a metal problem? One involving corrosion, high or low temperatures, abrasion, fatigue? Helpful answers are in our "Standard Alloys for Special Problems." Ask for a copy. If your problem involves nuclear equipment, ask too for "Corrosion Problems in Nuclear Reactor Power Stations." Its up-to-date information on nickel alloys in these applications will prove a valuable addition to your reference files.

The International Nickel Company, Inc.
67 Wall Street INCO New York 5, N. Y.

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INCO NICKEL ALLOYS

NICKEL ALLOYS PERFORM BETTER LONGER

Metalworking Outlook

Are You Ready for the 1960s?

Too many U. S. businessmen are underestimating the growth of the nation's economy in the 1960s and will not be able to adequately meet competition, warns Thomas Lenihan, president of C.I.T. Corp., one of the nation's largest industrial financing firms. "In growing competition," the financier points out, "manufacturers can ill afford to operate outdated machinery and equipment." He notes that almost one-fourth of all U. S. machine tools are at least 20 years old and more than 65 per cent are at least ten years old. The '60s "will be an era of tremendous opportunity, but the businessman of tomorrow should not expect to compete for his share of the market with production equipment he bought 10 or 20 years ago," says Mr. Lenihan.

Motor Vehicle Registrations Still Climbing

Motor vehicle registrations are expected to reach 68.4 million units this year, says B. D. Tallamy, federal highway administrator. Passenger cars should total about 57 million units, a 1.9 per cent increase over the 1957 mark. Trucks and buses will number about 11.4 million, 1.8 per cent above '57 figures. California leads in registrations with 7 million. New York, Texas, Pennsylvania, Ohio, Illinois, and Michigan account for another 22 million.

Steel Inventories Strengthening

Steel inventories show signs of turning up after an 18-month decline. Industry sources figure stocks have leveled off at about 10 million tons, some 13 million tons lower than they were last summer. Buildups are underway, indicating that October production will be at the highest point since last November.

Is Barter Program Stalled?

Traditionally, several Washington agencies have had the responsibility of recommending minerals to be included in the Agriculture Department's barter program. But as yet the White House hasn't requested their advice. The program seems to be stalled until a new list is prepared.

Railroads Try Self-Help Plan

Two major railroads will try out guaranteed volume freight rates in an effort to regain business. The Minneapolis, St. Paul & Saulte St. Marie and the New York Central are reportedly going to offer preferred rates to shippers (regardless of size) who guarantee a certain percentage of their business over the period of a year.

Manufacturers' Sales Improving

Manufacturers' sales hit $26 billion in August, about $3 billion below the volume in the same month last year, says the Office of Business Economics, Commerce Department. After allowance for seasonal and working day dif-

ferences, August shipments of durable goods were 1 per cent above July's. Manufacturers' backlogs came to about $47 billion at the end of August, vs. almost $58 billion a year earlier.

Steel Industry Wage Costs Keep Rising

The average hourly payroll cost for wage earners in the iron and steel industry climbed to a record $3.265 during August, reports the American Iron & Steel Institute. Average hourly costs in July were $3.248. They came to only $2.990 in August last year. (Totals do not include an average cost of more than 33 cents per hour for pensions, social security, and insurance.) The average hours worked per week rose to 34.9 in August, vs. 32.4 in the previous month. The industry's total August payroll hit $283,058,572, up from July's $267,486,586. Employment in August: 514,895, vs. 508,876 hourly and salaried workers in July.

Seek Nuclear Airplane Speedup

Advocates of an accelerated nuclear aircraft program are making another bid for top level approval (the President turned them down in the spring). The Russians already have a large turbojet engine and aircraft to use it. U. S. proponents are predicting the Soviets will have a nuclear plane before the end of the year, and they don't want us to fall too far behind.

Help for Shipbuilders

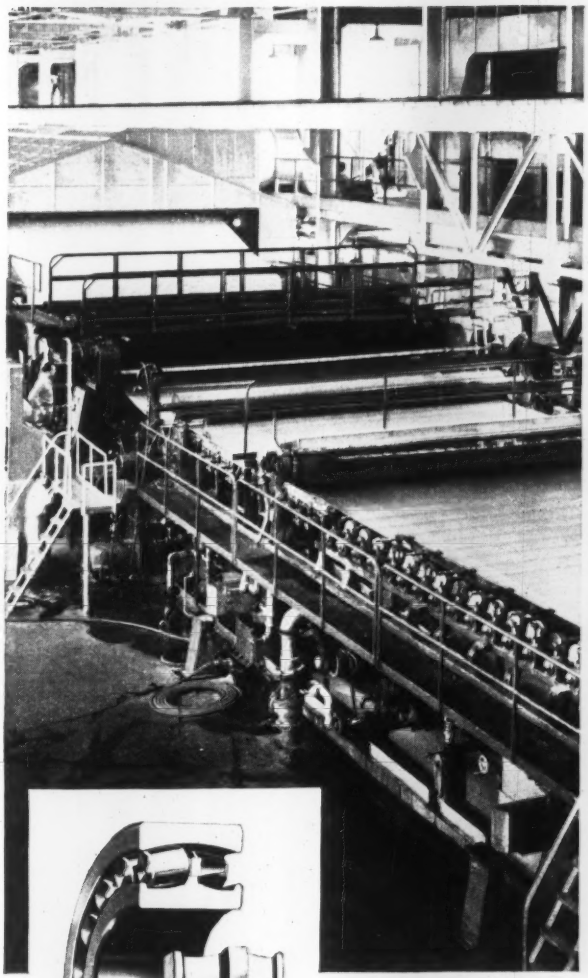
Farrell Lines Inc. has applied to the Maritime Administration for a construction subsidy to build five Cargoliners (C2S). This will be the first phase of Farrell's program to modernize its 11-vessel fleet under the maritime program which meets cost differentials between building ships in the U. S. and foreign yards. Lykes Bros. Steamship Co. was recently granted a differential based on Japanese yard costs (rather than West German or Dutch yards) which are 20 per cent below European prices. The whole maritime program with U. S. shippers is expected to bring $180 million worth of construction into U. S. yards by 1968.

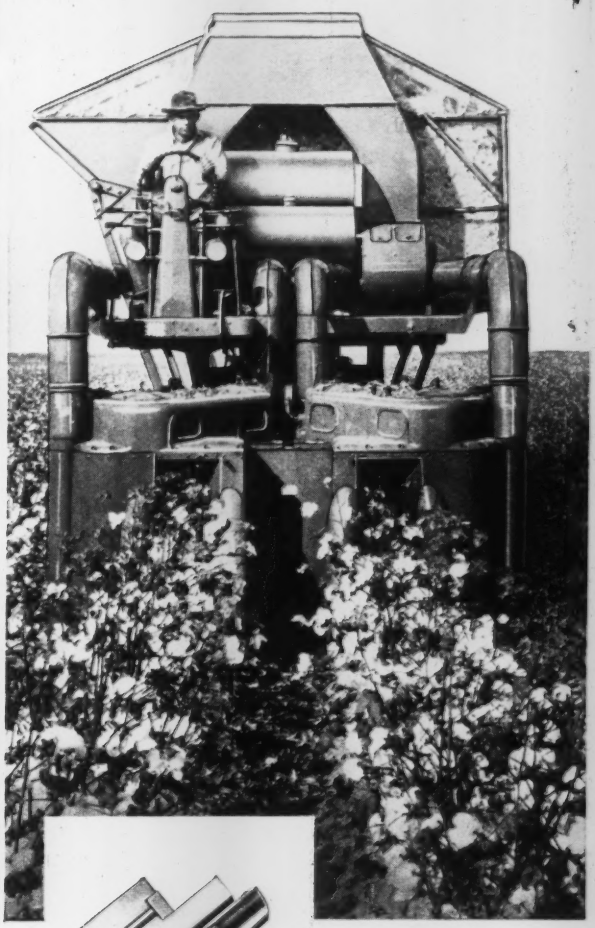
Designer Dreyfuss Looks Ahead

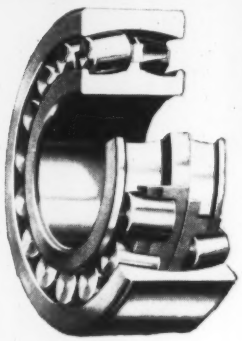
Industrial Designer Henry Dreyfuss predicts: The U. S. home of the future will have innovations like these: Kitchen floors that are automatically washed, a tray that prepares breakfast automatically, and a sewing machine that welds synthetic fibers.

Straws in the Wind

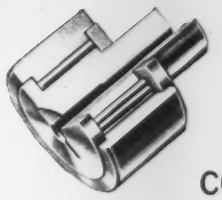
U. S. Steel Corp. has established a new corrosion study program in eight major U. S. cities . . . Republic Steel Corp. is reopening its Newfield coal mine at Verona, Pa. It has been closed since last December . . . Stockholders of most small corporations have until Dec. 1 to decide whether to switch their full shares of corporate profits or losses to individual 1958 income tax returns . . . C. W. LaPierre, vice president of General Electric Co., says his firm's 1958 sales may reach about $4.1 billion. Its record: $4.3 billion in 1957.







from
paper mills...



to
cotton pickers

Torrington makes the right anti-friction bearing for every basic need!

It may be self-aligning Spherical Roller Bearings in a paper machine producing record tonnages. Or compact, high-capacity Cam Follower Needle Bearings activating the intricate mechanical fingers that take the back-breaking work out of cotton picking.

Between these two examples lie all kinds of requirements. To meet the broad range of needs, Torrington makes every basic type of anti-friction bearings.

This wide range of experience enables you to rely on Torrington for engineering recommendations based on your specific application requirements. Your Torrington representative has valuable experience—rely on him for assistance. **The Torrington Company, Torrington, Conn.—and South Bend 21, Ind.**

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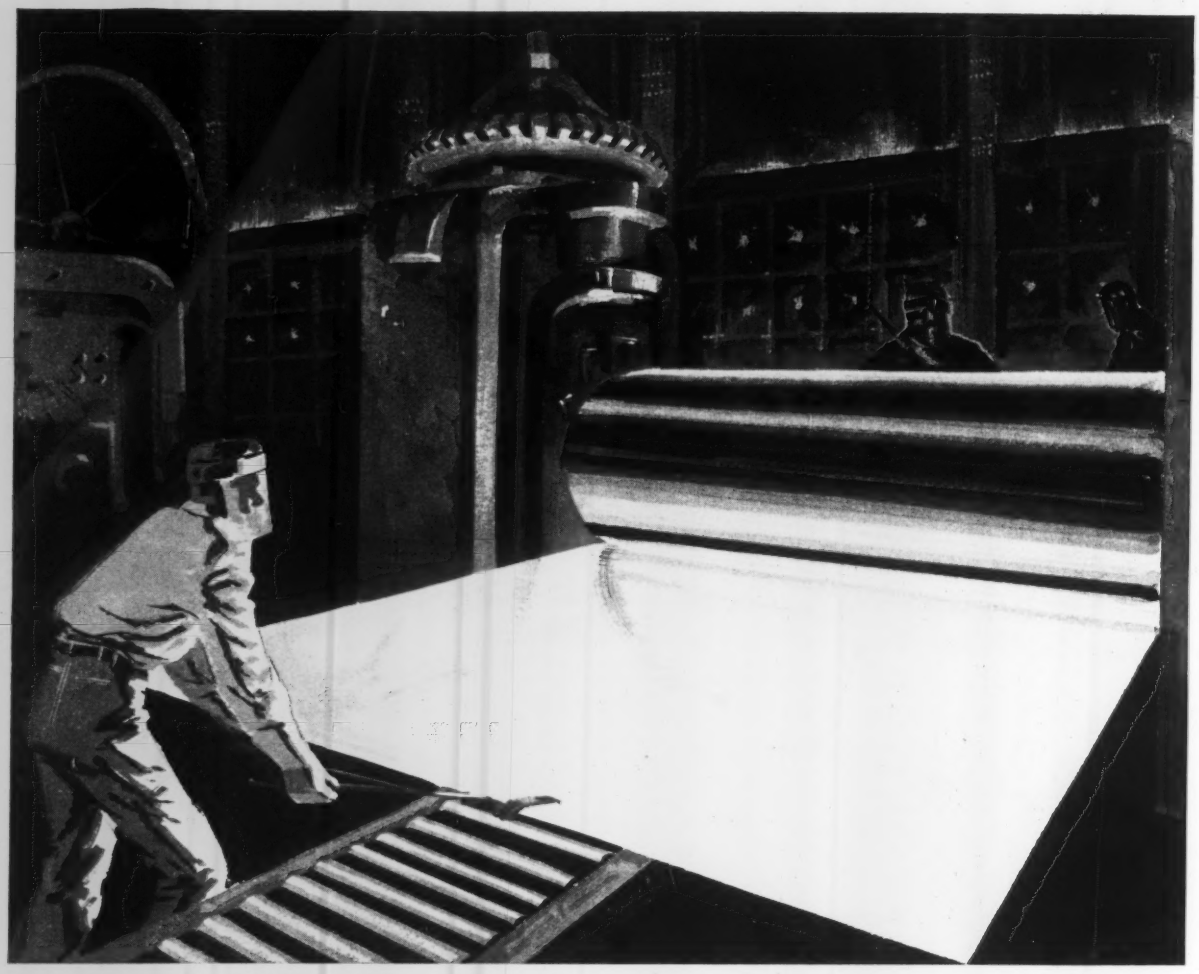

Need WIDE Stainless Sheets?

Get Armco Stainless Steel sheets or light plates up to 84 inches wide

Heavy gage sheets in high-quality Armco Stainless Steels are available in 7-foot widths—lighter gages up to 73 inches. And when it comes to light plates (also up to 84 inches wide), you'll find the excellent surface finish produced on Armco jobbing mills is unsurpassed. Get specific information about Armco Stainless for *your* applications. Use the handy coupon.

New steels are born at Armco

ARMCO STEEL CORPORATION, 2938 Curtis St., Middletown, Ohio

We're interested in___-inch wide, Type___ Armco Stainless Sheets in the following gage___. We make_____

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ARMCO STEEL

Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

The Fifth Freedom

In an address to Congress on Jan. 6, 1941, President Roosevelt borrowed from the Bill of Rights of the U. S. Constitution in citing four essential human freedoms:

1. The freedom of speech and expression.
2. The freedom of every person to worship God in his own way.
3. The freedom from want.
4. The freedom from fear and aggression.

But in 1941, he apparently saw no need for citing a fifth freedom:

5. The freedom of every man to work without being forced to join a labor union.

The fifth freedom, now one of the most crucial issues of our times, is being decided at the polls by the voters in six states (California, Colorado, Idaho, Kansas, Ohio, and Washington). The right-to-work measures ban the union shop and make it unnecessary for a man to join a union to get a job.

Such laws already have been approved by the voters in 18 states, including Indiana and Texas.

The issue has not come up in 24 other states, including highly industrialized Illinois, Michigan, Minnesota, Missouri, New Jersey, New York, Pennsylvania, and New England. But it will.

Union leaders, fearful of losing income from dues and their grip on workers, hope to defeat right-to-work laws at the polls with a barrage of propaganda.

In contrast, management is doing little or nothing to set the facts straight, even within their own organizations.

We believe that well-managed labor unions have their place. They have done much to improve working conditions and provide for the security of workers.

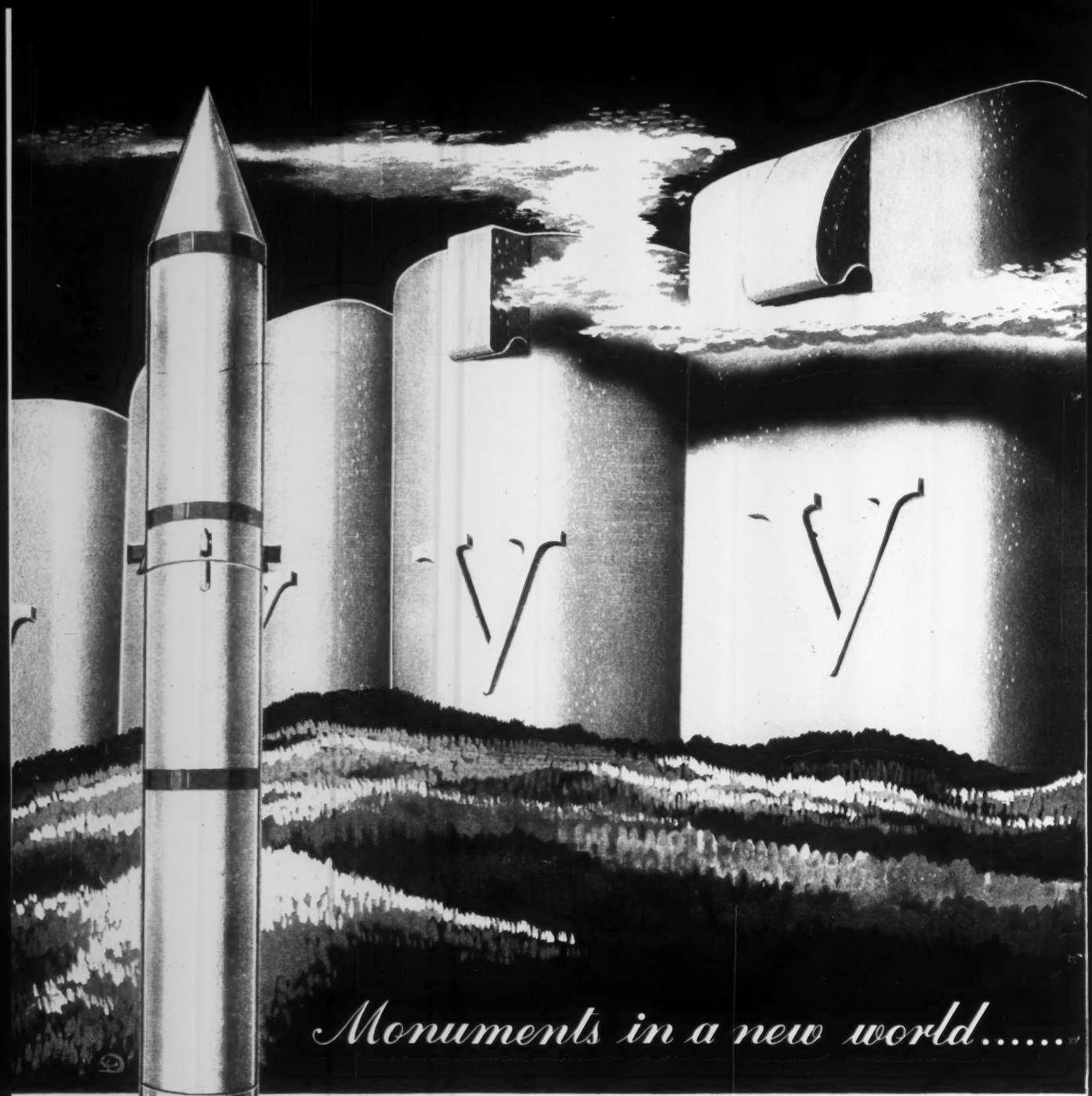
But we don't believe that labor unions should be given absolute power over the workingman by making union membership a condition of employment.

We think that every workingman should be encouraged to find out about the right to work for himself. We think that management should help make the facts available.

Then each person can decide whether he wants to keep or throw away his fifth freedom.

Russian workers don't need to join a union to get a job!

Irwin H. Such
EDITOR-IN-CHIEF



Valley ingot moulds are designed for individual steel plant conditions. These moulds meet today's metallurgical requirements

VALLEY MOULD AND IRON CORPORATION

GENERAL OFFICES: HUBBARD, OHIO

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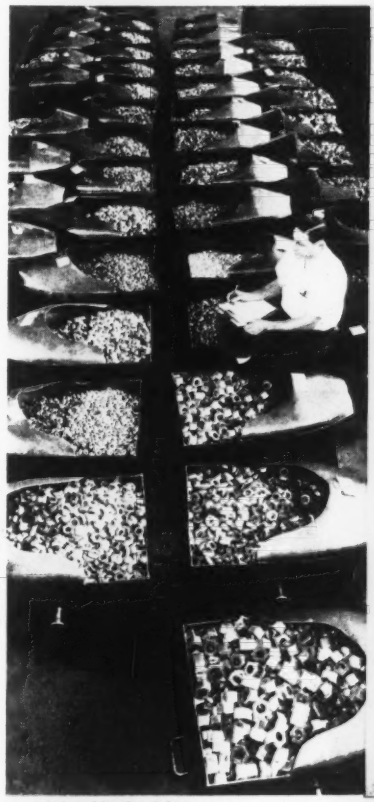


Jones & Laughlin Steel Corp.

How Partmakers See Fourth Quarter

DIECASTINGS—The auto and small appliance industries are causing a last quarter pickup.

ELECTRICAL EQUIPMENT & MOTORS—The trend is up, but fourth quarter sales gains appear slight.

FASTENERS—An uptrend started in the third quarter. Last period will be the year's best, say the majority of producers.

FERROUS CASTINGS—With nowhere to go but up, most makers expect slight gains in the final quarter.

FORGINGS—Most makers look for a pickup to start during '58's last three months.

GEARS—Some makers note slight improvement, but those tied to the capital goods industry generally feel they'll have to "wait till next year."

NONFERROUS CASTINGS—Increased orders from auto and miscellaneous industries make producers confident of last quarter gains.

SCREW MACHINE PRODUCTS—Makers predict sales will rise 5 to 10 per cent.

SPRINGS & WIRE SHAPES—Bigger backlogs cause industry leaders to predict sales increases of up to 30 per cent.

STAMPINGS—Auto contract settlements have brought renewed confidence, but few firms predict substantial last quarter gains.

Recovery Quickens in Component Industry

Most producers are more optimistic about the fourth quarter than they were at midyear. They cite: Inquiry volume is up; inventory reduction may be about over; new orders are up

LOOK FOR the fourth quarter to be the year's best sales period, leading executives in barometric partmaking industries told STEEL last week.

Most of them think their order volume will edge ahead of the first quarter level and be significantly above the second and third quarter pace.

They are nearly unanimous on this point: The last period looks decidedly better now than it did at midyear. Their renewed confidence is strengthened by a deluge of inquiries, a belief that inventory reduction has nearly ended, and a faster flow of new orders.

Slow but Sure—They don't look for a sharp upturn; they admit that most of the improvement is due to seasonal factors (like Detroit's new model introductions and some belated preparations for Christmas buying). But most partmakers feel the upturn will be more than seasonal.

Markets Mixed—You can almost tell a company's markets by looking at its September sales curve. Sellers to the auto industry have experienced a substantial pickup; producers of parts for appliances have noticed slight improvement in orders and a significant increase in serious shopping. The business machine market, one of the last to feel the recession, is one of the first to feel the recovery, suppliers indicate.

The heavy construction and farm equipment industries continue to place substantial orders, partmakers report. Railroad suppliers notice signs of improvement but see no solid upturn before 1958's closing weeks.

The capital goods field is the dark spot. Some component people who lean heavily toward that market are working at less than 30 per cent of capacity. But even they are

becoming more optimistic. They say industry's new cost consciousness is paying off in purchases of more efficient equipment. Several suppliers told STEEL they expect this market to strengthen noticeably before the end of 1959's first quarter.

Trend Is Up—Though they believe they'll continue to be plagued by hand-to-mouth buying and rush deliveries, most component people queried by STEEL say they've seen evidence that inventory liquidation has about run its course. They're nearly unanimous in predicting better business weather for 1958's final quarter. These comments are typical:

L. B. Genebach, president, United Steel & Wire Co., Battle Creek, Mich.: "Sales are improving. Our backlog is about 40 per cent above the midyear level."

Donald Workman, executive vice president, Gray Iron Founders' Society: "We expect October and November to be our industry's first 1-million-ton sales months this year. Some customers are speeding up releases; the inventory picture is brightening." Mr. Workman predicts sales of gray iron castings in 1959 will be 19 per cent better than this year's.

R. E. Black, general sales manager, National Screw & Mfg. Co., Cleveland: "The fourth quarter should bring a considerable gain in orders. Three months ago, we expected slow improvement in the last period; now it's shaping up as the best quarter of the year."

Robert H. Burdsall, vice president, Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.: "We're confident of a good fourth quarter. It will bring a pickup of more than seasonal nature."

Ray Swanson, sales manager, Sommer Metalcraft Corp., Crawfordsville, Ind.: "We expect a 25 per cent improvement in orders during the last quarter. But we still expect to see a lot of hand-to-mouth buying."

T. P. Champion, president, Champion Rivet Co., Cleveland: "We expect our fourth quarter sales to be 10 per cent higher than those of the first quarter. That's far better than the second and third quarters. The railroads, one of our major markets, are now showing signs of life."

John C. Sears, executive secretary, American Gear Manufacturers Association, Washington: "We believe the last three months will show a 5 to 10 per cent increase over the average for the first nine months. Distributors have worked off inventories and are beginning to fill their shelves again. There has been some improvement in most gear markets—even a little in machine tools."

F. Kermit Donaldson, executive vice president, Steel Founders' Society of America: "Although a lot of foundries report business is no better now than it was three months ago, there are glimmers of improvement in the industry."

A. E. Field, secretary, National Malleable & Steel Castings Co., Cleveland: "We feel more confident about fourth quarter prospects."

David Laine, secretary, American Die Casting Institute: "The fourth quarter looks like it will be the best of the year. Of course, the whole situation depends on how well the new cars sell." He estimates aluminum diecasting production for 1958 at 315 million lb (vs. 376.5 million last year).

Harmon McBride, president, Reliable Spring & Wire Forms Co., Cleveland: "Our incoming orders in the fourth quarter should be 25 per cent greater than the average for the other three quarters. That's due largely to a seasonal pickup in orders from the appliance and automotive industries. But we also notice improvement in orders from International Business Machines Corp. and Sperry Rand Corp. The capital goods field is beginning to show encouraging signs."

Lowell D. Ryan, executive vice president, Malleable Founders' Society: "General business is substantially better than it was three months ago, and we look for a reasonably strong fourth quarter."

L. E. DeGroat, vice president, Permold Co., Medina, Ohio: "We feel more confident. October looks better than the last few months."

C. L. Snowdon Jr., president, Reliance Steel Casting Co., Pittsburgh: "I'm more optimistic now than I was in July. Some mills are dusting off projects that were shelved earlier. But I don't know whether the last quarter will be as good as the first."

Mark Ervin, assistant sales manager, Titusville Forge Co., Titusville, Pa.: "The fourth quarter will probably be our best. Most of the new business is coming from manufacturers of process equipment and electrical machinery."

Frank Barton, president, Fulton Foundry & Machine Co., Cleveland: "Prospects haven't changed much since midyear. We still don't see a lot of business for the next three months."

". . . inventory picture is brightening."

—**Donald Workman**, Gray Iron Founders' Society

". . . a 5 to 10 per cent sales increase."

—**John C. Sears**, American Gear Manufacturers Association

How Users Plan Expenditures

Automatic Equipment

Handling Equipment	$ 800 million
Machine Tools	500 million
Special Machinery	1,000 million
Process Machinery	900 million

Automatic Controls

Instruments	$ 430 million
Electronic	115 million
Electric	750 million
Pneumatic & Hydraulic	500 million

Automation Spending in '59 Slated To Hit $5 Billion

EXPENDITURES for automated equipment and controls are expected to reach $5 billion in 1959.

Small-lot plants will spend some $650 million; medium-lot plants, about $1.3 billion; and large plants, $3 billion (see table).

The $5-billion estimate is a projection by the editors of *Automation*, a Penton publication. In a survey of U. S. plants, they learned from 2693 plants responding: 523 expect to spend a total of $89,856,980 next year ($171,811 each).

Increasing Market — Automatic equipment is becoming an increasingly more important segment of the industrial market. The survey reveals that 20 per cent of the answering machine builders offer automatic features with all the equipment they offer for sale. By 1963, 25.6 per cent of the machinemakers say they expect 100 per cent of their offerings to be automated.

Slightly more than 34 per cent of the respondents say that half the equipment they sell is automated. Some 51 per cent say they expect 50 per cent of their business to be in this field by 1963.

Highlighting the increasing importance of automated equipment, 39.7 per cent of the responding machine builders say automated equipment accounts for 25 per cent of their sales. But only 20.3 per cent replying expect their share of the automated equipment market to run that low by 1963. Some 6 per cent of those answering the *Automation* survey report that none of their business is in automated equipment, but only 3 per cent say they expect the same thing to be true in 1963.

Plans for 1959—The survey shows that of the user plants reporting, about 73 per cent already have automated drive and speed regulation. Some 41 per cent plan to add more in 1959.

Of those answering: 60 per cent have interlocked control of operations, 33 per cent plan more in 1959; 43 per cent have automatic measuring and gaging, 25 per cent plan additions; 28 per cent have automatic weighing, 16 per cent expect to add more next year; 42 per cent have automated process sensing and control instruments, and 24 per cent plan more in 1959.

Some 23 per cent already have tape and punch card control, 15 per cent will add it in 1959; 5 per cent have computer control, 4 per cent will add it in '59; 17 per cent have automatic data processing equipment, 12 per cent will get it next year; 8 per cent have remote control, and 6 per cent plan to add more in 1959.

A Closer Look—One outstanding feature is the move toward purchasing high-priced machinery. Example: Of the plants answering, 20 per cent use automated machine tools, and 10 per cent report they expect to add more next year. Some 11 per cent use machine tools with automatic load and unload, and 7.6 per cent will add more in 1959.

In higher-priced equipment, only 2 per cent use machine tools with tape and card control. But another 4 per cent expect to add more next year.

And Still To Come—Survey respondents indicate that the next five years will see automation of processes such as enameling, baking, stamping, drawing, assembly, finishing, blanking, forming, fabrication, welding, polishing, weighing, and rolling.

Participants report that machining and finishing operations will be automated mostly by combining operations within a special machine and by handling devices between semiautomatic type machines.

Who's Responsible?—In 52.8 per cent of the responding plants, automation engineering is a group or co-operative responsibility. Responsibility and direction are lodged in three functional groups: Manufacturing engineering, production executives, and administrative management.

Two or more of those groups are represented in plant automation engineering decisions.

Prefabbers Boost Share of Market

	Prefabs built	% of total single family units built
1958*	110,000	11.0
1957	93,500	10.7
1956	94,790	9.6
1955	93,000	7.8
1954	77,000	7.7
1950	55,000	4.7

*Estimated by STEEL.
Source: Home Manufacturers Association.

Prefabs Gaining Strength

Builders are whipping many of their problems and simultaneously expanding a metalworking market. National Homes has announced a model with an aluminum exterior

TAKE A LOOK at the home manufacturing industry. It's an infant that's beginning to flex its muscles. Its mounting strength signals new opportunities for metalworking.

Home construction traditionally has been an activity for the local builder and his crew of carpenters, masons, bricklayers, and other skilled workers. The new look: Mass-produced components on factory assembly lines, mass promotion and distribution, brand-name selling.

War Baby—Prefab homes started to appear in quantity after World War II. Most were small, some poorly constructed. Many building codes prohibited prefabs, and many banks refused loans for them. Sales climbed (see above) as the industry hurdled the obstacles and began to win public acceptance.

Gets Aluminum Exterior—National Homes Corp., Lafayette, Ind., the industry's sales leader, has announced a new home with an aluminum exterior for production in 1959.

Developed in co-operation with Aluminum Co. of America, Reynolds Metals Co., and Kaiser Aluminum & Chemical Corp., it uses 3000 to 5000 lb (depending on house size) of aluminum. The siding is aluminum sheeting sandwiched with gypsum. The roof is made by riveting sheets to cushioned hangers on trusses.

"The baked, lifetime finish on aluminum exteriors will save home buyers up to $4000 in maintenance and repairs over a 20-year period," says James Price, National Homes chairman.

(Alcoa is expected to continue its experiments with an all-aluminum home.)

Sales Up This Year — Prefab home sales this year were bolstered by the reactivation of GI home loan provisions and lower FHA down payment requirements. "We should set a sales record in the second half of 1958," says Conrad Harness, executive vice president, Home Manufacturers Association. "We'll sell well over 100,000 units by yearend."

National Homes expects to sell over 24,000 homes this year, compared with 17,000 in 1957. F. J. Samerdyke, president of Harnischfeger Homes Inc., Port Washington, Wis., reports sales to date are 50 per cent ahead of last year's, and current backlogs indicate that total sales for 1958 will probably be 75 per cent ahead of 1957's. Pease Woodwork Co., Hamilton, Ohio, is strengthening its sales program and looks for a record year in 1959.

The U. S. has about 300 prefabbers, but most build less than 1000 units a year. The major builders include: National; Harnischfeger; Pease; Scholz Homes, Toledo, Ohio; Knox Corp., Thomson, Ga.; and Inland Homes Corp., Piqua, Ohio.

Most manufacturers produce houses ranging from $8000 to over $30,000, but the primary market is in the $16,000-and-below range.

Difference Is in Labor—National Homes' plant in Lafayette rivals many metalworking plants in manufacturing techniques, plant layout, and material handling. "Our biggest advantage over conventional construction methods," explains George Price, president, "is in labor. Conventional construction for the average house takes 600 hours. Our houses require 70 manhours in the factory and only 80 more on the building site."

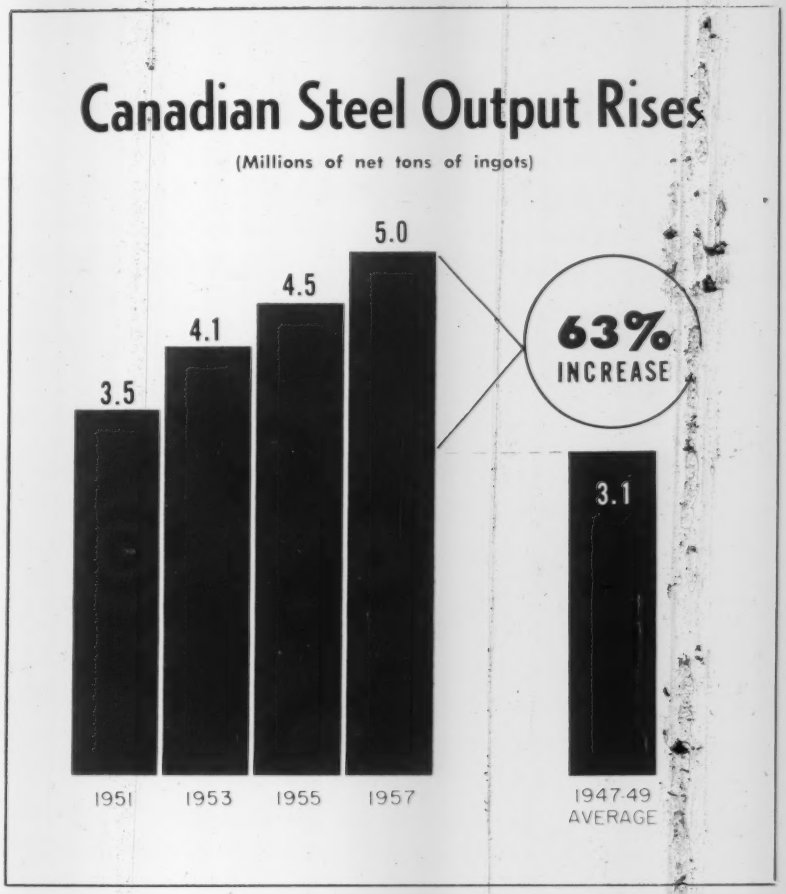
You get an idea of the potential savings to the purchaser when you look at National's requirements to produce 110 homes daily. Its inventories average 60 million board feet of plywood and 4½ million board feet of lumber, with a turnover of 13 times a year. Its furnace, plumbing package, and cabinet requirements are scheduled daily.

Prefabbers are good appliance customers. Harnischfeger reports that most of its homes are equipped with appliances (over 50 per cent are bought by dealers through Harnischfeger).

Steel Homes Coming?—U. S. Steel Homes Div., U. S. Steel Corp., has been working hard on developing a steel home. Within the last year, it dropped its last all-wood home and redesigned the Steelaire model it introduced last year. That home used about 6 tons of steel, primarily in structural applications.

"Our new home, called the Steelstyle," says Davis Boyd, president, "uses less steel than the old model, but the framing is still metal."

More Metal Applications—Prefabbers are helping extend metalworking's stake beyond plumbing fixtures and appliances. The use of metal window units, kitchen cabinets, and truss systems for roof and floor supports will grow.



Neighbors Up Steel Output

CANADIAN ingot production hit 5 million tons last year, only 300,000 tons off the record pace in 1956, reports the AISI. Another comparison: Production in 1957 was 63 per cent above the yearly average of 3.1 million tons in the 1947-49 period.

Imports of iron and steel products from the U. S. climbed to 1.9 million tons last year, some 800,000 tons higher than the yearly average in 1947-49.

Latin America—Rising steel production in the southern part of the Western Hemisphere reflects the driving need those countries feel for industrialization.

Mexican steel production was 686,000 tons of ingots in 1957, vs. 580,000 in 1955.

Brazil—Brazilian ingot production in 1957 climbed to 1.7 million tons, making her the largest producer in Latin America. Last year's figures were 420,000 tons higher than 1955's. Output in 1953 was 1.1 million tons; average production in 1947-49 was 546,000 tons yearly.

Argentina—The only country to produce less steel in 1957 than it did in 1955 was Argentina. Output in 1957 dropped to 229,000 tons, some 11,000 under the 1955 figure. The average yearly output from 1947 to 1949 was 184,000 tons.

Chile—This country's output of ingots in 1957 hit 425,000 tons, compared with 320,000 tons in 1955, says the AISI. Production in 1953: 345,000 tons. Average yearly production from 1947 to 1949: 34,000 tons.

Executive Appraises Missilework

Howard Barr, assistant to the president, Consolidated Western Steel Div., U. S. Steel Corp., Los Angeles, comments on his firm's six years of experience as a missile subcontractor:

1. How does missilework differ from commercial work?

It is substantially more highly engineered, more complicated, and requires better quality. Working for the government is no different from working for any other customer, except for a firm's dependence on the year-to-year availability of funds from the Pentagon. Also, the lack of complete information on total quantities of products required affects shop arrangements and tooling, as do continuous and rapid product changes.

2. What special management techniques are required?

A readiness for inspection by a number of different government agencies is necessary. Accelerated accounting and record practices were established. Special planning and work control units help overcome the difficulties of the business. Projects are isolated to expedite changes.

3. How difficult is it to prove your firm's capability?

It requires continuous interpretation, but, generally, the products have never been made before.

USS Brand Birds?

Keen competition for prime missile contracts will get even tougher if U. S. Steel starts bidding. Here's an exclusive roundup on the pros and cons of such a move

FORECAST: The world's largest steelmaker will enter the competition for prime missile and space contracts in 1959.

Directors' Decision—Consolidated Western Steel Div., U. S. Steel Corp., Los Angeles, presented the case for bigger corporate participation in defensework this summer to top corporate officials.

Big Steel's directors are expected to take up the matter this week at a meeting in Pittsburgh. No immediate decision is promised. The subject has been thrashed around plenty already, but more studies are anticipated before a final decision. Apparently, the directors will be asked to authorize a full-scale market analysis, including overtures to the Pentagon.

The potentials of prime missile contracts reportedly have been discussed seriously by other steelmakers. At this point observers figure U. S. Steel will be the first, and perhaps the only, steelmaker to make the move.

Minuteman Invitees—Symptomatic of the attention being paid to missiles by nonaircraft firms: Three of the 17 firms invited by the Air Force to bid on final testing and assembly contracts for our first solid fueled ICBM, the Minuteman, are automotive companies; one is General Electric Co. The other 13 are aircraft firms.

Autodom's Problems—With the return of an auto boom like 1955's deemed uncertain for several years, industry observers contend Detroit has manufacturing space available for missiles. If it lacks all the engineering and scientific talent necessary for missile and space technology, it cannot afford to allow other industries to pass it by in the advanced technology of the next decade.

New Technology — The speeds and altitudes to be achieved in the 1960s and 1970s will demand new materials. Armco Steel Co. and U. S. Steel have developed special missile steels, yet, they need prime missile contracts to put them into a position to anticipate the Pentagon's needs, rather then being confined to responding to the Pentagon's demands.

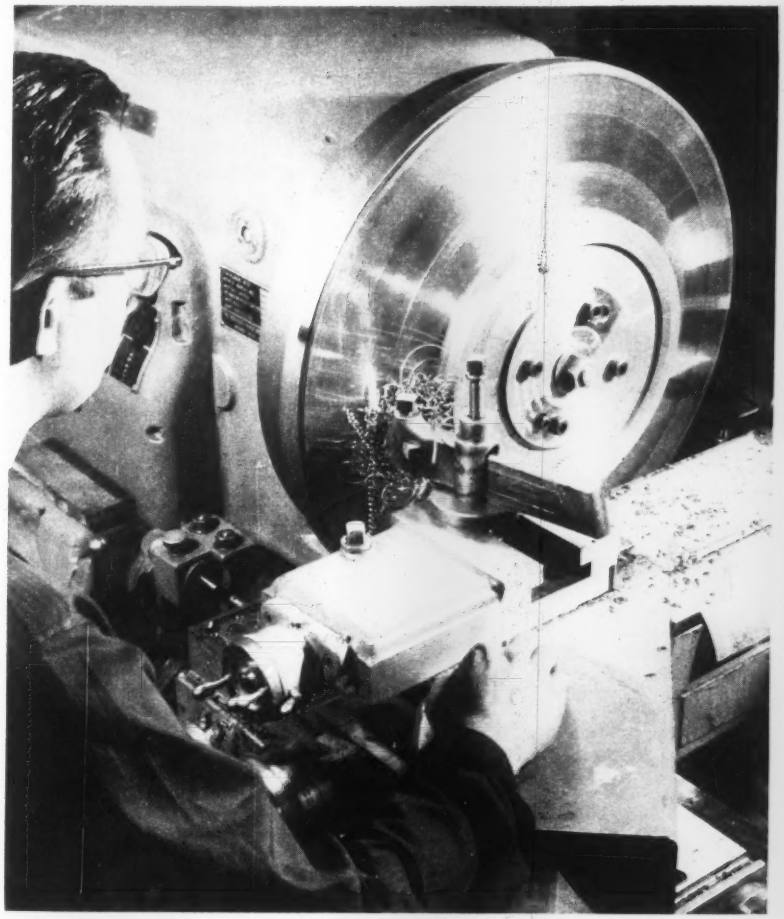
Reynolds' Experience—U. S. Steel, it is thought, is particulary aware of Reynolds Metals Co.'s work on the Army's Redstone.

Reynolds reports new welding techniques applicable to commercial work for aluminum came out of the program.

Customer Reaction—U. S. Steel lacks nothing in management skill and can recruit the necessary technical talent. What it must weigh before taking the prime step is the reaction from its customers. Is the opportunity to get in, the directors will ask themselves, enough to balance the dissatisfaction of customers in the aircraft and electronic industries, against whom U. S. Steel will be competing?

A second problem: Douglas Aircraft Co. Inc., for example, has over 4000 supporting subcontractors. U. S. Steel, through its divisions, could reduce its support to perhaps a dozen firms. It would be open to the charge of trying to hog the business: Primes who subcontract to their own divisions have already received the attention of Capitol Hill, and will again.

It's a big step. Perhaps a big piece of this country's future rests on U. S. Steel's decision.



Monarch Machine Tool Co.

Tool Prices Resharpened

Producers of cutting tools are returning to spring price levels after six months of brisk competition. One maker says reduced prices were unrealistic

PRICE FIGHTING in the cutting tool industry is coming to an end. On Oct. 1, industry leaders raised prices (in most cases to April levels) in an attempt to stabilize the situation.

Price cutting started in April. Manufacturers (particularly those making drills, reamers, milling and similar cutters) faced reduced demand for their products.

Eventually, almost every other maker of those lines cut prices or offered discounts. After the leaders took action, others had to follow suit.

W. Jarvis, president, Jarvis Corp., Los Angeles, explains: "We had to cut our prices, because we're a small company and have to remain competitive. With us it must be the role of follow the leader."

Not Universal—A few manufacturers didn't lower prices.

Brown & Sharpe Mfg. Co., Providence, R. I., had an added problem. Says Thomas Hollis Jr., general manager, Cutting Tool Div.: "When new prices were announced, we were in the middle of a program to completely re-evaluate prices of our 3300 tool line. Much of our pricing structure was archaic, with no direct relation between costs and prices."

B&S found, for example, that some tools sold for less than the cost of materials, while others were priced much too high. When other producers announced price slashes, B&S management could follow, or announce that a new price system would be forthcoming.

The company chose to use its new system. A letter from President Henry Sharpe Jr. to users announced that his firm's prices were undergoing revision, but not reduction. It explained: B&S was trying to work out "a creative approach to drowning the inequities of an outworn pricing system."

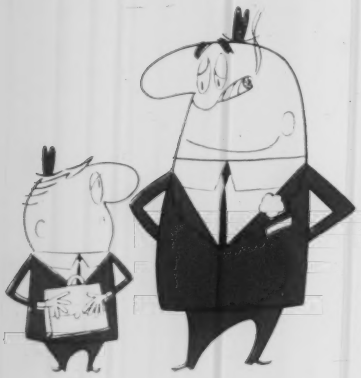
New B&S prices went into effect on July 7. Some cutting tool prices went up, others down. Prices are scaled so buyers of quantities pay a lower unit price. A 2-in. shell end mill used to cost $51.50. It's now priced at $68 to $84, depending on the number ordered. A 24-pitch 1¾ in. OD gear cutter used to cost $10.55; the new prices are $7.22 to $9.35.

At B&S, it wasn't as much a question of trying to hold the line in the face of competition as it was an effort to get a realistic price structure based on the cost of making the tools.

What Happens Now?—As one cutting tool manufacturer put it: "Everyone knows the reduced prices were unrealistic. They were losing their shirts. It may take a while to raise prices all the way back to April levels, but it's going to have to be done. Rising costs of steel and labor make it impossible not to do it and still stay in business."

It's being done now by practical manufacturers who subscribe to the most basic rule for running a business: You have to make a profit.

Carbide Grades—Prices of solid carbide cutting tools were not trimmed in the spring and now seem destined to rise. Industry officials are expecting increases of about 10 to 12 per cent around the first of the year. The rising cost of the raw carbide material that goes into the tools is the biggest factor involved.



More Defense Money for Small Firms?

MANY industry observers in Washington think fiscal 1959 is the time for small business to break the hold of large firms on defense business. They contend: If more small firms don't crack the market during the period, Pentagon buying patterns may become set to a large extent—making it harder for small firms to increase their share. Such thinking is guiding the work of Sen. George Smathers (D., Fla.) and his Government Procurement Subcommittee.

Pentagon officials insist that small businesses should be subcontractors primarily, but trends to centralize buying power in the hands of weapon systems managers are probably working against that role. Increased allocations for research and development and slightly less for production (STEEL, Oct. 6, p. 40) mean more money for large firms with the capability for advanced study. The weapon system approach is also tending to eliminate subcontractors. Northrop's proposed merger with American Bosch Arma will certainly result in less subcontracting. One obvious reason for such mergers is to bring more work into the company where profits are easier to come by.

Bread and Butter Missiles Would Help

Talking more optimistically about small business' defense role, missile boss William Holaday notes a "steady trend to divide the missile system into parts which can be manufactured separately . . . and later assembled with the complete weapon." This presumably means missiles are becoming more like Detroit products: Broken into standard components and farmed out. That may be true in the case of a few birds like the Nike and some of the air-to-air missiles, but rapid technological advances work against such an approach.

A look at ballistic missile programs pinpoints the problem. The Titan, not yet operational, is possibly slated to become only a small run, special bird. The Atlas (supposedly our standard ICBM, but not yet operational) may be replaced by the Minuteman by 1963. Of our two IRBMs, one will never see mass production. Even the Falcon, a real bread and butter type, has had at least three versions in its short life.

The Army program has been the easiest for small business to crack, but it seems destined for a change: The solid-fueled Pershing, which will replace the Redstone, will be handled by Martin in the manner the Air Force works its weapon system managers. The Redstone was primed by Chrysler under the old procurement system.

Congress Looks to 1970

"The constant, continual, and seemingly ceaseless, reductions in yearly prime contract awards to our small defense manufacturers" may mean their disappearance from defensework in the next decade, warn some Senate Small Business Committee members.

The Small Business Investment Act, designed to give small firms long term loans, is one way Congress hopes to beef up some small businesses for the next decade's progress in weaponry. (Intentions to incorporate have already been filed with the Small Business Administration by four investment companies.) Help is also expected to come from new Defense Department procurement regulations, and from the ruling allowing progress payments to small firms to be made at the discretion of local contracting officers, rather than having to come all the way from the Pentagon.

Proprietary Data Redefined

Perkins McGuire, assistant secretary of defense for supply and logistics, reports that the data and copyrights section of the Armed Services Procurement Regulation will be revised Oct. 15. Significant changes: 1. Design data and proprietary data have been redefined so that they are mutually exclusive. 2. For data to be proprietary, it must be so specified in the contract. 3. Items developed at the contractor's expense which are proprietary will have the same protection that standard commercial items now have.

NASA Picks Up More Space Projects

The National Aeronautics & Space Administration has received jurisdiction over these projects: 1. Vanguard, including 150 Navy scientists and Dr. John Hagen, project director. 2. Four lunar probes and three satellite projects from the Advanced Research Projects Agency. (Two of the probes and the three satellites were assigned to the Army Ballistic Missile Division.) 4. Almost $60 million worth of engine programs, including nuclear, fluorine, and the 1 million lb thrust, single chamber program North American is working on. The transfer amounts to about $150 million worth of work. ARPA, with a budget of $420 million, will stick to development of antimissiles, solid propellents, Pied Piper (the Lockheed reconnaissance satellite), "and other miiltary exploratory space programs." The X-15 is a NASA-ARPA Project.

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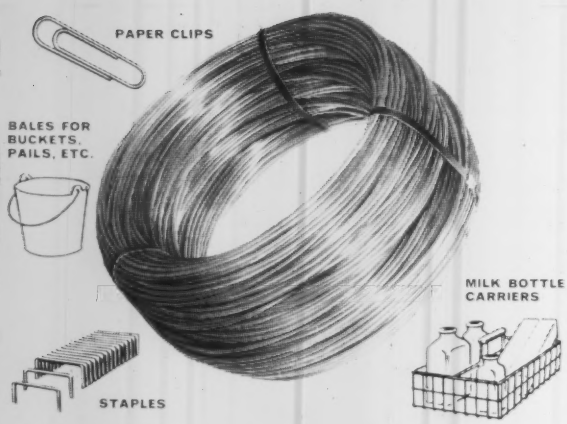

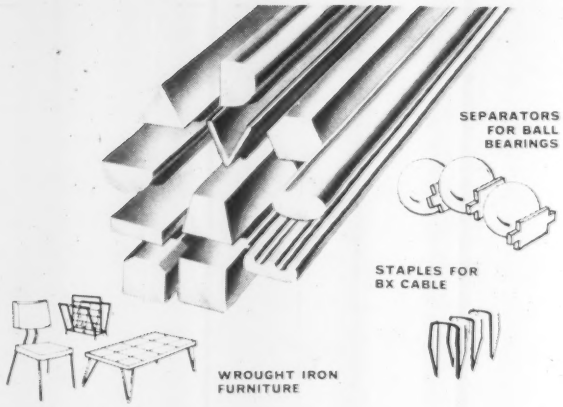

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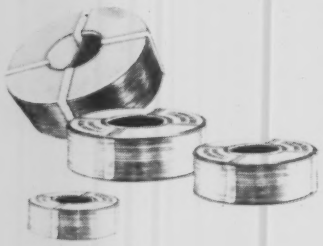

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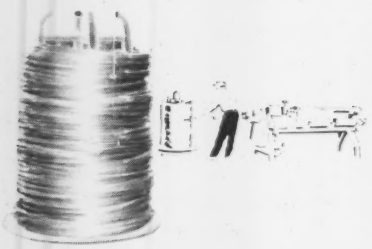

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1. Reply quickly to customer inquiries and quotations.
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4. Look for improvement of parts through closer co-operation between engineers and fieldmen.
5. Be certain the quality of the replacement part is better than that of the original one.
6. Set high sales goals. Don't be content to replace only worn-out parts.

Replacements Boost Sales

Producers of repair parts tell STEEL it pays to actively seek such business at a time when investment in new equipment is lagging. Here are some techniques they use

MANY equipment manufacturers are boosting profits by aggressively selling replacement parts.

Thompson Products Inc., Cleveland, reports sales of automotive repair parts have moved up moderately in the face of a downtrend in new car equipment.

A Pittsburgh supplier of steel mill equipment says: "The bulk of our business has been trending toward the replacement market."

Profit Picture—The profit on replacement parts can be greater than that on new equipment, says an eastern mill machinery manufacturer. "Competition is so keen in new machinery sales this year that our profits are trimmed. We have had trouble in recovering the engineering cost in original equipment sales. Selling replacement parts can be easier and more profitable."

Here's how successful companies are carving out a larger slice of the replacement part business and beefing up their profits in the process.

Control of Stocks — Inventory management is vital. A firm with too few parts won't fill many rush orders. Keeping too many parts in stock will drain away profits. Suppliers try to control inventories by examination of customers' needs.

Cleveland Trencher Co., Cleveland, stresses rapid delivery of parts to operators of its equipment. The company has filled emergency orders by taking the needed parts from equipment being assembled in its plant.

A midwestern supplier of automotive parts reports: "The customer won't wait to be served. We expanded our field warehouses from 12 in 1948 to 38 today. When a jobber needs a part quickly, he can get it from our warehouse in his area."

Material handling techniques also offer ways to improve profits and speedier service. A supplier of automotive parts in Michigan comments: "We speed the handling of parts in the warehouse to cut down on rising labor costs. When we send an order to our warehouse to be filled, we arrange the items so the warehouseman can pick them out in sequence as he walks down the aisles."

Research Helps—Market studies will broaden part sales. An Ohio supplier of automotive parts divides sales territories on the basis of auto registrations. An Illinois producer of construction equipment builds its stocks of parts in late summer and in midwinter to take advantage of the two peak periods of repairwork.

All part manufacturers stress the importance of hard selling. "When new equipment orders are slack, our salesmen call on companies not using all of their equipment to suggest retooling old units while they're idle," say sales managers at Zagar Inc., Cleveland.

Plan of Attack — J. J. Rosecky, vice president, operations, Clark Bros. Co., Olean, N. Y., one of the Dresser Industries, divides part sales into three categories: 1. Business which comes to the firm automatically. 2. Business which goes to competitors. 3. Purchases which the customer doesn't make unless they're generated by the seller.

"Constant attention to prompt customer service, reasonable prices, and personal contact with the customer will prevent entry of competitors," explains Mr. Rosecky. "To win business from rivals we need good salesmen to carry our story to the customer's door."

"Updating old equipment with redesigned parts generates additional business," Mr. Rosecky adds.

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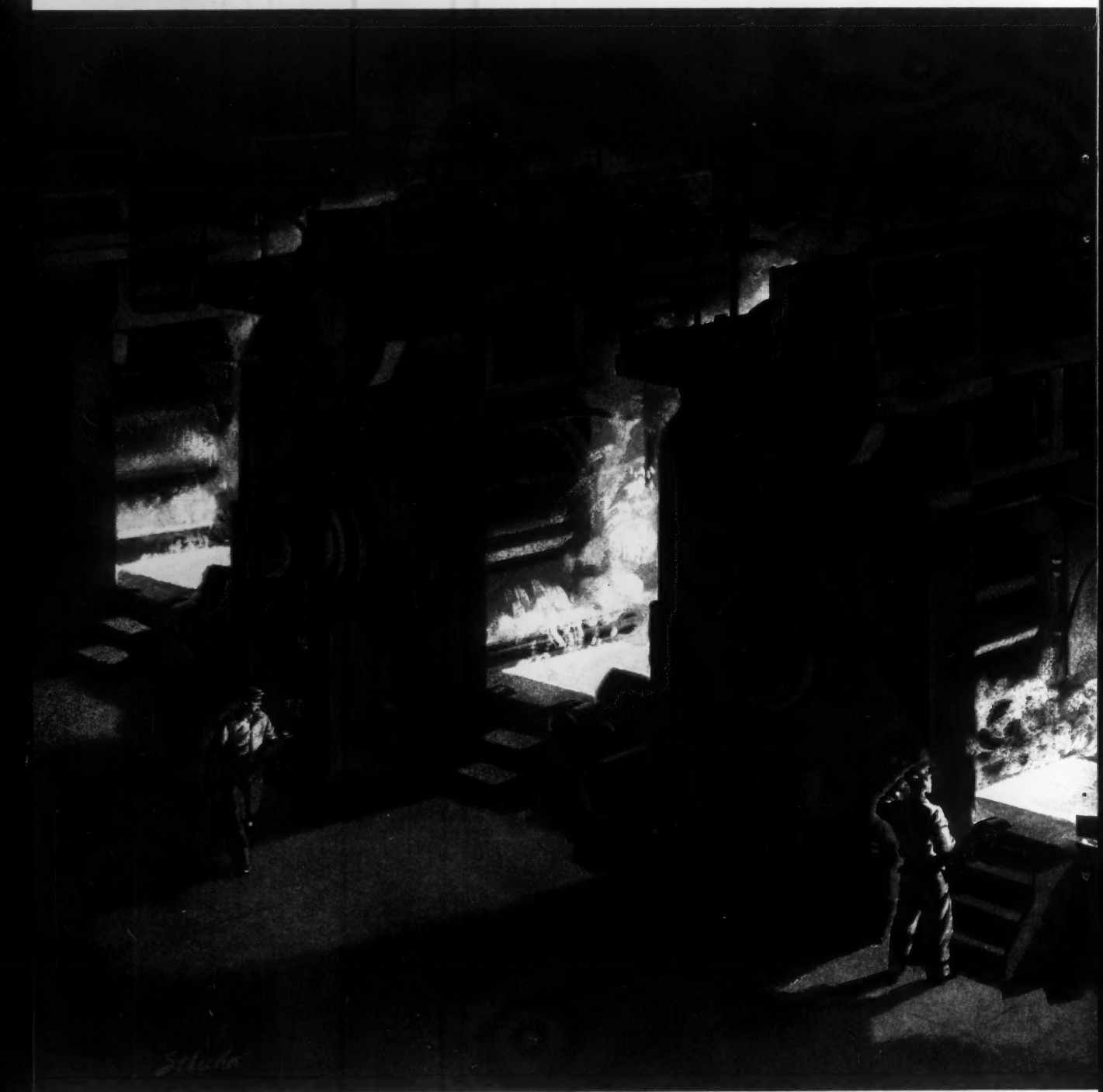

Products for steel: motors, m-g sets, rectifiers, control, pumps, *Texrope* drive equipment, crushers, grinding mills, screens, transformers, unit substations, switchgear, circuit breakers, turbine-generators, voltage regulators, blowers, compressors, condensers, and water conditioning equipment.

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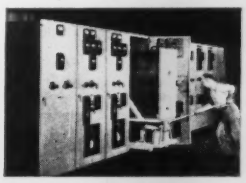
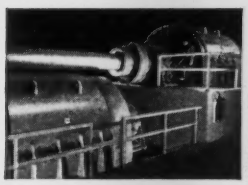
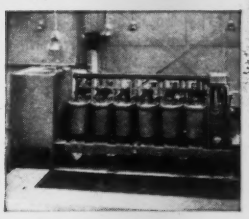


Switchgear is specially designed by Allis-Chalmers to bring high voltage to load centers, with resultant economy in cable costs, minimum line loss, efficient regulation, and complete protection.



Dc motors — Precision speeds for hot-strip mill performance are provided by a wide range of dc motors powered by supporting motor-generation sets or rectifiers.



Mercury arc rectifiers furnish variable voltage dc power in support of dc drive motors. They are low cost, high efficiency units providing fast response to control signals, resulting in better voltage control and reduced maintenance.

For hot-strip mill operation, Allis-Chalmers also supplies mag-amp regulators, and auxiliary motors and control.

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JACK B. SCHNEIDER is chief industrial engineer for Toledo Stamping & Mfg. Co., Toledo, Ohio.

He is probably typical of the men in his profession. He is 35 years old, married, and the father of two sons. He attended the University of Alabama for one year, and he holds a B.S. degree in industrial management from the University of Toledo. To get his degree, he went to night school for three years, and he is currently working toward his master degree at the same school.

Mr. Schneider started his career with Toledo Stamping as an apprentice tool and die maker. After a four-year apprenticeship, he worked for two years as a journeyman, then went into his firm's time study department. He progressed to his present position after a stint in the quality control department.

As chief industrial engineer, Mr. Schneider is concerned with time study, quality control, and plant layout. He's young, ambitious, and anxious to improve himself. He is a careful reader of technical and business papers, and he is a member of the American Institute of Industrial Engineers, the American Society for Quality Control, and the Toledo Technical Society.

His definition of industrial engineering: Getting the most from men, material, and equipment.

His Job—Bert H. Norem, professor of Industrial Engineering, University of Syracuse, says industrial engineering is the engineering of manufacturing.

It's an apt description. Industrial engineers have a variety of functions (see list). Their activities include: Selection of plant manufacturing processes and assembly methods, selection of tools and equipment, design of a plant's physical facilities, control system designs, cost reduction, development of wage payment systems, and job evaluation.

Professor Norem pinpoints the position when he says: "Industrial engineering is a staff function and as such is advisory in nature."

He adds: "There are two important reasons for this. It avoids complicating the line personnel. Equally important is the difference in attitude and approach between management and industrial engineering.

"The industrial engineer must have an investigative mind and be especially capable of analysis, design, and evaluation. Management is involved with the execution of plans based on information from industrial engineering."

The industrial engineer works closely with both management and employees.

He is a major contributor to management planning.

What Kind of Man—The industrial engineer must be a sort of

# of Many Talents

- **Wage Incentives**
- **Production Control**
- **Material Handling**
- **Cost and Budgetary Control**
- **Organization Design**
- **Operations Research**

composite engineer, accountant, and business executive.

To be successful in his chosen field, he must have an aptitude for higher mathematics, statistics, economics, and business administration. He will have to be interested in all kinds of jobs and machines and in the men who handle them. He must have good judgment and be able to turn knowledge into results.

The industrial engineer is both a problem finder and solver. Like a doctor, he must be able to diagnose the disease, then know how to cure it.

He must be articulate. He should be able to gather all facts related to a problem, work out a solution, then present his conclusions in clear, concise language.

He will have an open, inquiring mind. He will be available for suggestions and he will seek out new methods and ideas. He will be a subscriber and reader of many different types of publications and he will be on the lookout for items to help him do his job more efficiently.

The industrial engineer will be able to get along with the men in the plant. A successful engineer will foster the idea that he is not their boss, but rather an adviser.

He will never be satisfied with things as they are. His reason for existing will be to find a better way to do it.

Education—Leonard Cochran, an industrial engineer for Jones & Laughlin Steel Corp., is proof that a man doesn't need an engineering degree to become proficient in his chosen field. Mr. Cochran started with J&L as a management trainee and branched into the industrial engineering department.

A college degree isn't an essential —but it helps. Some universities offer degrees, and nearly all offer some opportunity to work toward a degree.

Because of interest rather than set rules, most industrial engineers have a hard core of mathematics, drawing, chemistry, physics, English, and economics in their educational backgrounds.

Those courses are taken by all engineering students, but the budding industrial engineer branches into mechanical, electrical, and civil engineering subjects. He tackles accounting, and he adds labor relations and sociology—because he's interested in people. Seminars and student programs supplement classroom instruction. Laboratory periods are used to acquaint students with tools of their profession. Graduate programs are offered by many schools, and many industrial engineers are taking advantage of them.

With the increase in educational opportunities, industrial engineers generally are winning the prestige due them for their role in metalworking.

Opportunity—One young industrial engineer expresses himself quite candidly: "I decided to become an industrial engineer because I think it is the field most likely to lead me into top management."

All young men in the field aren't looking that far ahead, but the speaker knows the facts. Professor Norem notes: "A person educated as an industrial engineer and who has had considerable experience practicing his specialty is excellently equipped for management—if he has the interest and the leadership talents."

Just as all attorneys can't become Clarence Darrows, so it is that all industrial engineers cannot hope to become presidents of their companies. But most can look forward to a future as important members of the metalworking management team.

The Payoff—The average industrial engineer is paid about $10,000 per year, and he is considered by top management to be a valuable member of the firm.

If his ambitions run high, he's knocking on the right door. As one executive puts it: "When promotions come around, who knows more about plant operations than the industrial engineer? He's been exposed to everything from the front office to the production lines."

All industrial engineers don't make top-line decisions, but they do influence them. And if he wants it, a good industrial engineer has a running start toward that top management plateau.

Promising Future—The U. S. Department of Labor says employment of industrial engineers is expected to keep rising. Reasons: The need to increase productivity and to lower costs; the growing recognition of the importance of scientific management and safety engineering; and the long term expansion of U. S. industrial activity.

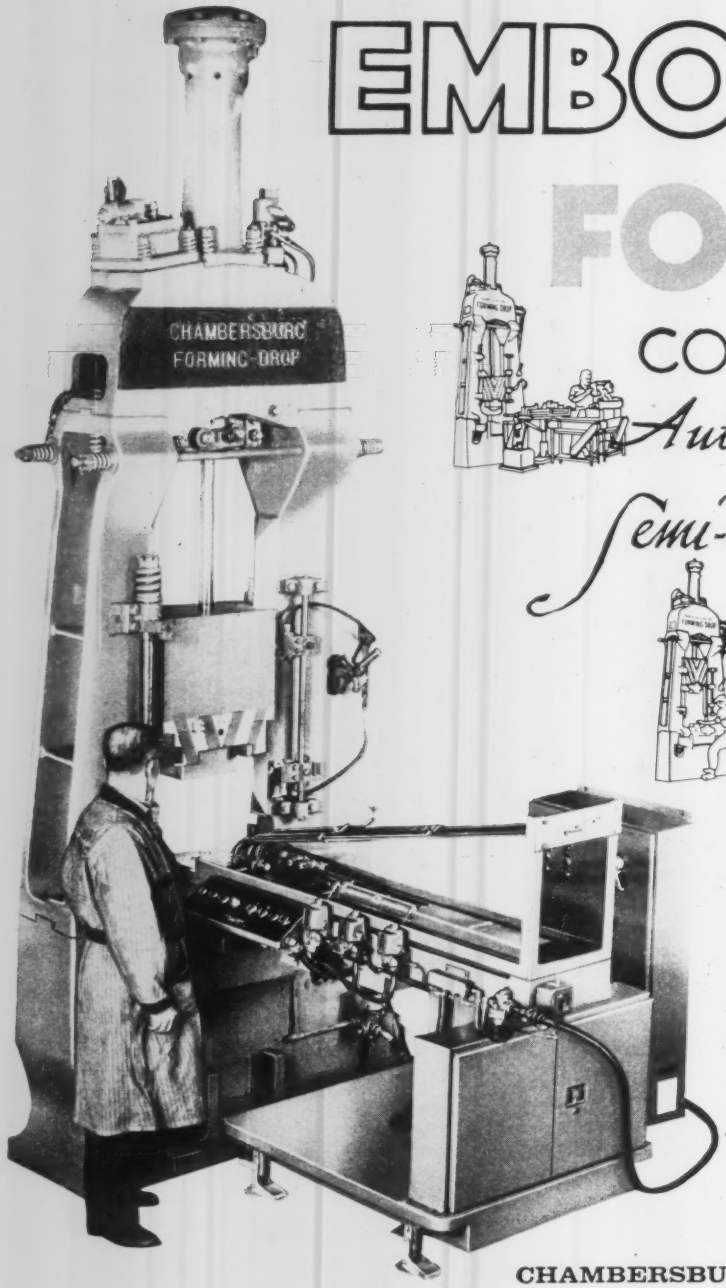
Industrial engineers will continue to gain stature as members of metalworking's management team.

COINING
EMBOSSING
FORMING
COLD STRIKING

Automatically

Semi-automatically

Manually



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FORMING DROP

Because it thinks public doesn't want radical changes . . .

Ford Soft-Pedals Styling

SALES STRUGGLES in 1959 will be decided mainly on the styling front, declares J. O. Wright, general manager of Ford Motor Co.'s Ford Div. He believes this year's car buyers want more restraint, more economy, and better taste. Mr. Wright indicates that's why Ford has avoided radical styling changes such as those made by its major competitor, Chevrolet.

If Ford's beliefs are correct, it will stand a good chance of repairing its competitive fortunes in 1959. This year, Ford hasn't made out too well against Chevrolet which was "radically restyled" for 1958. At the moment, Ford is an estimated 11 per cent behind Chevrolet in market penetration. In 1957, Ford was slightly ahead of Chevy in sales. Productionwise, Ford built 662,758 cars in the first nine months of this year, against Chevy's 906,415.

Who Knows? — Autodom wonders if the public will know that almost all the sheet metal on the 1959 Ford is newly designed. The basic silhouette looks much like it has for the last two years.

Dealers apparently think customers will recognize changes. Walter J. Cooper, Ford Div. general sales manager, says advance dealer orders for 1959 cars and trucks already total more than $1 billion. That volume will keep all Ford plants operating overtime at least through November, he adds.

The Changes—Tail lights will be recognized as new. Ford has what it calls the "iris" design: Louvers around the glass make the whole light appear larger at night.

Grilles continue to be stamped from anodized aluminum and have a hobnail appearance. Front parking lights are in the bumper. Back-up lights are set in quarter panel fins. Roofs are flatter.

Ford has dropped its Custom series, so the 1959 Ford line includes 17 models ranging from the Custom 300s (which are 6 in. longer than 1958's) to the Fairlane and Fairlane 500 series. In 1958, Ford offered 21 models in five series. Dealers already are talking about another series to be added to the top of Ford's line later this year.

In Specs—All '59 Fords have 118-in. wheelbases and are 208 in. long over-all. Last year, Fairlanes were 207 in. long on a 118-in. wheelbase. Customs were 202 in. long and had a 116-in. wheelbase. Heights are substantially the same this year as last. So is seating space. The windshield area is 29 per cent (280 sq in.) greater.

Station wagons are 5 in. longer. Cargo area is 8 in. longer, and there is 11 cu ft more cargo space than last year. Six wagon models are in the 1959 Ford line.

In Engines—The division has not changed bores, strokes, or displacement of its four basic engines, but it has modified pistons, combustion chambers, and the carburetion system to give slightly lower compression ratios and horse-

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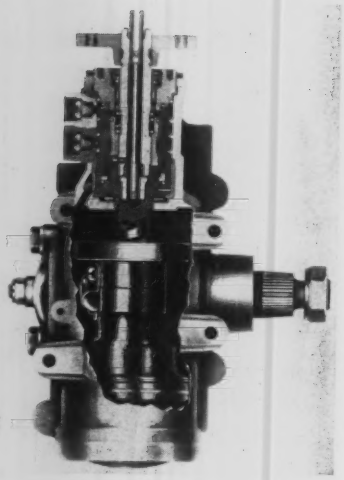
GM's Rotary Valve Power Steering



Chevrolet is the only General Motors division that won't be using the rotary valve power steering system developed by the corporation's Saginaw (Mich.) Steering Gear Div. W. H. Doerfner, general manager, says the system provides precise steering response in 0.25 degree of wheel movement and reduces driver effort to less than 1 lb for regular driving and 2.5 lb for parking. Previously, 3 to 4.5 lb of effort was needed to actuate GM's power steering assemblage.

Heart of the system is the hydraulic valve which operates in a rotary motion. Other spool type valves have lands running around the diameter instead of being parallel to the axis. In GM's design, the worm assembly is fixed in an endwise direction by thrust bearings on the lower side of the shoulder, upper end of the worm, and upper end of the valve assembly. A torsion bar centers the valve spool. The setup allows the valve to be actuated more quickly by rotation of the spool within the valve body rather than by axial movement of the worm or through cam type devices.

The entire unit has nine fewer external seals and 12 fewer parts.

power ratings. Dr. Andrew A. Kucher, Ford Motor Co.'s engineering and research vice president, says only the optional, 352 cu-in. displacement engine will use premium fuel. All the changes make for more economy, particularly in the 30 to 70 mph driving ranges.

The rundown:

1959 Ford Engines

Cu in.	Hp/rpm	Comp. ratio
223	145/4000	8.4:1
292	200/4400	8.8:1
332	225/4400	8.9:1
352	300/4600	9.6:1

Transmissions—Ford is introducing a two-speed automatic transmission this year which will replace the three-speed Fordomatic. The new job uses a hydraulic torque converter combined with an automatic planetary gear train. Dr. Kucher says the transmission has gear ratios of 1.75:1 in low, 1.00:1 in drive, and 1.50:1 in reverse. For downhill braking, the transmission may be downshifted manually at speeds up to 65 mph.

The new Fordomatic uses 105 fewer parts than its predecessor and is 50 lb (22.8 per cent) lighter. Part of the weight reduction is accounted for by an aluminum transmission case and bell housing. The price isn't available, but it should be about $100. The old Fordomatic lists at $179.80.

Gear spacing and shift linkages on the standard manual transmission have been redesigned for easier shifting, and finer pitch gear teeth are used for quieter operation.

Other 1959 Ford features include aluminized mufflers and a long-life enamel dubbed Diamond Luster. The company claims it needs no waxing and is 50 per cent more chip resistant than former coatings.

Prices—Ford's 1959 prices had not been announced when STEEL went to press, but they are expected to be 2.25 to 3 per cent higher. Even with a hike, Mr. Wright claims the Ford will undersell Chevy.

Chevy has increased the price of its cheapest 1959 car (Biscayne two door) $146 over the 1958 price leader (Delray two door). The figure is based on advertised, delivered prices which include federal excise tax and suggested handling charges. The comparable increase for Ford reportedly will be just under $70.

U. S. Auto Output

Passenger Only

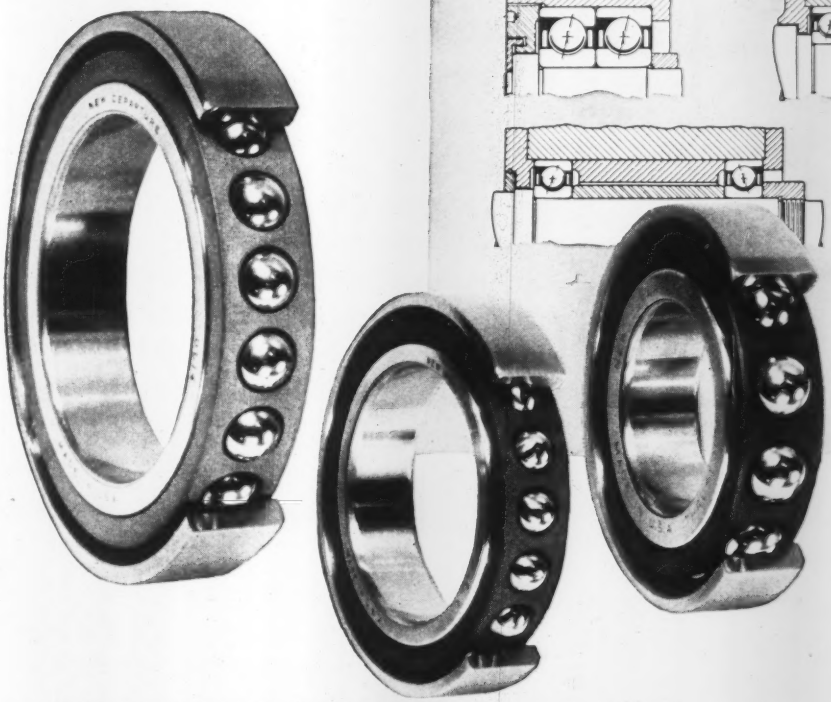
	1958	1957
January	489,357	642,090
February	392,112	571,098
March	357,049	578,826
April	316,503	549,239
May	349,474	531,365
June	337,355	500,271
July	321,053	495,628
August	180,324	524,354
September	131,952	283,852
9 Mo. Total	2,875,179	4,676,723
October		327,362
November		578,601
December		534,714
Total		6,117,400
Week Ended	1958	1957
Sept. 6	12,016	90,704
Sept. 13	24,072	85,816
Sept. 20	37,150	52,365
Sept. 27	42,599	51,552
Oct. 4	38,815†	21,975
Oct. 11	50,000*	38,626

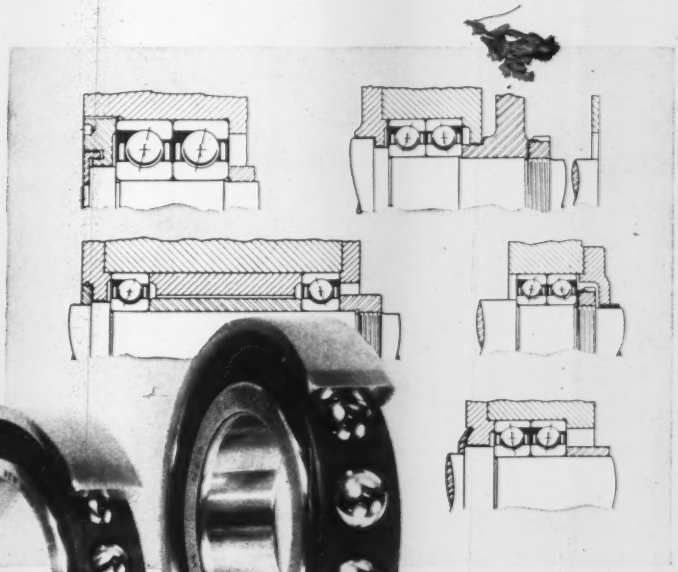
Source: *Ward's Automotive Reports.* †Preliminary. *Estimated by STEEL.

Exhaust Note

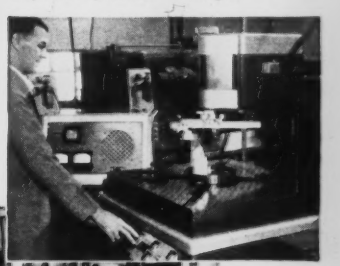
Strikes and model changeovers cut auto production in September to the lowest level for that month since 1938. Output: 131,952 cars, vs. 180,313 in August and 283,852 in September, 1957. In September of 1938, production was 65,159 cars.

ND FACTS





Wavometer test for ball race surface finish. One of many checks to assure the highest degree of accuracy in New Departure precision bearings.



Checking bearing face flushness under axial loads.

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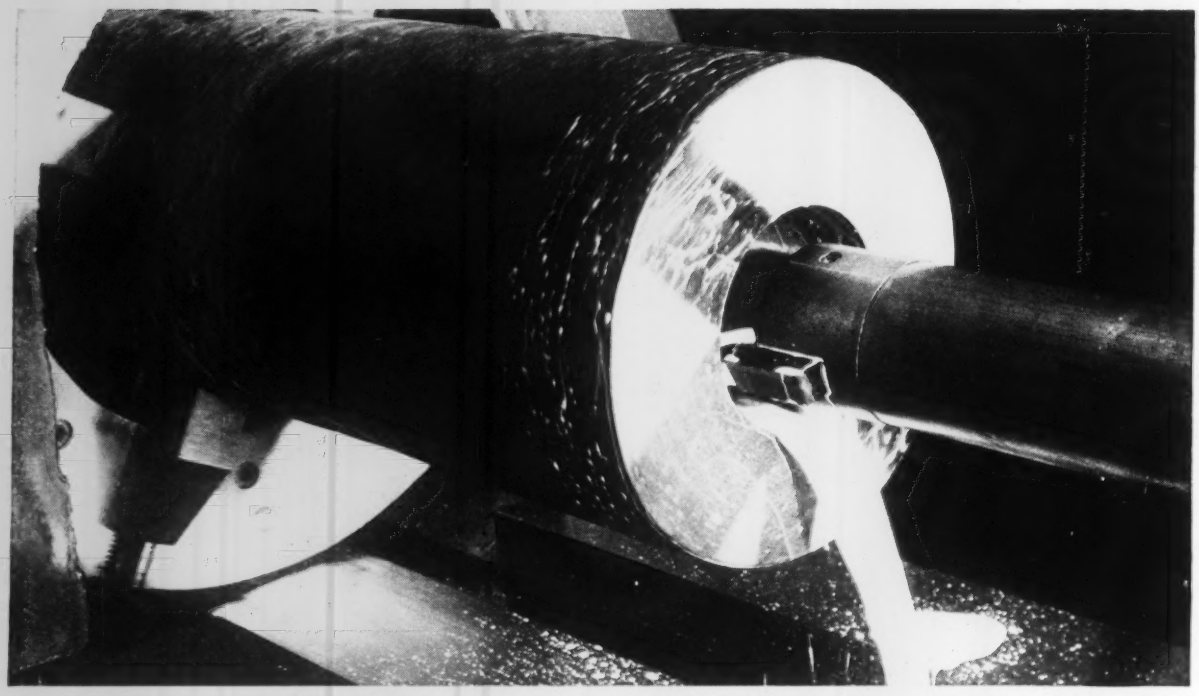

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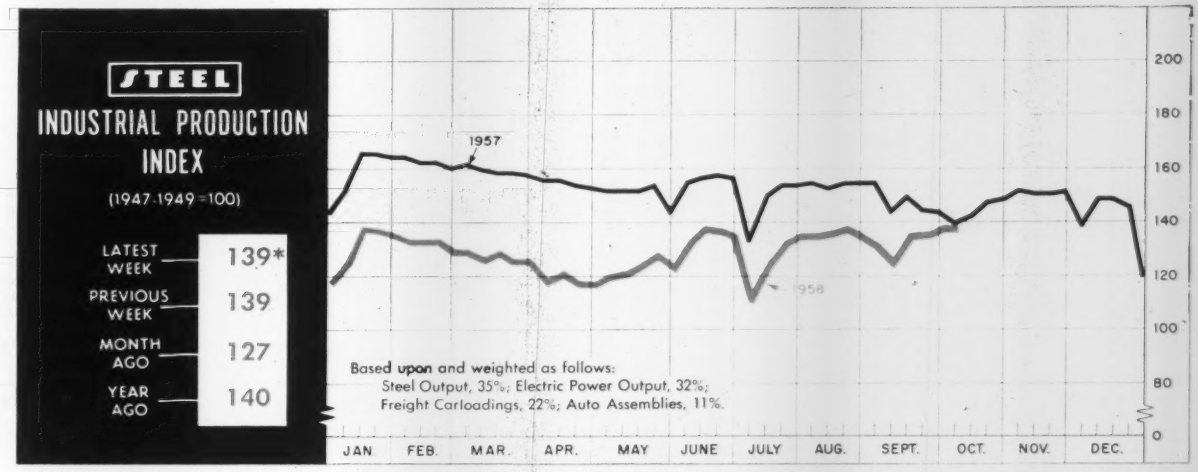

*Week ended Oct. 4.

Railroaders See First Signs of Recovery

STEPPED-UP activity in revenue freight carloadings is giving harassed railroaders some cause for cheer. It still leaves them with many unsolved problems, but at least they can see loadings heading back to prerecession levels. For industry in general, it is another sign that the recovery is gaining strength.

The steady upswing in carloadings has carried the weekly figures to the highest level since last November. At 672,924 cars during the week ended Sept. 27, they were still 9 per cent beneath the year-ago level, but the gap has narrowed from 21 per cent in July. The shippers' advisory boards of the Association of American Railroads reported in September that the deficit would shrink to only 6.2 per cent during the fourth quarter.

The advisers did not make it clear whether the relative improvement would be due to an increase in loadings or the fact that shipments of freight were declining during most of 1957's last quarter.

Seasonal Pattern—With industrial shipments increasing, and with a bumper agricultural crop this year, it is reasonable to expect carloadings to continue the uptrend until the iron ore boats dock for the winter. The decline in November will not be as great this year as in the last few because ore loadings have not been as big a factor as usual. Also, metalworking shipments should be improving in November because of new model auto buildups and pre-Christmas trade.

The upturn is causing some change of attitude in the industry. After scoring the best month for carloadings since last November, Howard E. Simpson, president of the Baltimore & Ohio Railroad, said his company is facing the fourth quarter with "cautious optimism." He thinks the recovery will come gradually over a period of months.

The Illinois Central Railroad is recalling 200 workers this month in anticipation of better conditions during the fourth quarter and through-

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	1,918[1]	1,901	2,105
Electric Power Distributed (million kw-hr)	12,300[1]	12,342	11,564
Bituminous Coal Output (1000 tons)	8,890[1]	8,425	10,248
Crude Oil Production (daily avg—1000 bbl)	7,100[1]	7,100	6,812
Construction Volume (*ENR*—millions)	$495.7	$370.7	$333.4
Auto, Truck Output, U. S., Canada (*Ward's*)	57,212[1]	61,253	35,257
TRADE			
Freight Carloadings (1000 cars)	672[1]	673	748
Business Failures (Dun & Bradstreet)	268	262	278
Currency in Circulation (millions)[3]	$31,215	$31,285	$31,038
Dept. Store Sales (changes from year ago)[3]	−2%	+1%	0%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$21,888	$23,515	$24,117
Federal Gross Debt (billions)	$276.7	$276.8	$274.2
Bond Volume, NYSE (millions)	$29.8	$31.5	$18.5
Stocks Sales, NYSE (thousands of shares)	19,228	18,481	8,067
Loans and Investments (billions)[4]	$93.4	$94.1	$86.6
U. S. Govt. Obligations Held (billions)[4]	$31.5	$31.9	$24.5
PRICES			
STEEL's Finished Steel Price Index[5]	246.65	246.65	239.15
STEEL's Nonferrous Metal Price Index[6]	202.6	199.0	209.2
All Commodities[7]	118.8	118.9	117.5
Commodities Other than Farm & Foods[7]	126.0	126.0	125.6

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1958, 2,699,173; 1957, 2,559,490. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-39=100. [6]1936-39=100. [7]Bureau of Labor Statistics Index, 1947-49=100.

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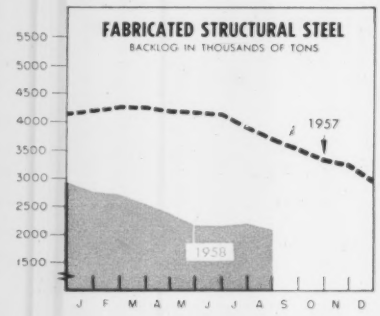
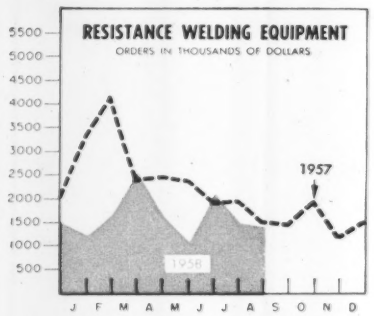




	Shipments 1958	Shipments 1957	Backlogs 1958	Backlogs 1957
Jan.	316.7	290.1	2,778	4,194
Feb.	282.6	319.0	2,727	4,262
Mar.	336.6	342.4	2,542	4,245
Apr.	323.6	362.2	2,387	4,142
May	328.2	377.3	2,211	4,172
June	329.2	384.7	2,191	4,134
July	290.9	342.5	2,220	3,907
Aug.	298.0	383.8	2,119	3,707
Sept.	....	338.6	....	3,521
Oct.	....	384.8	....	3,322
Nov.	....	334.1	....	3,233
Dec.	....	320.2	....	2,959
Total	....	4,179.7		

American Institute of Steel Construction.
Charts copyright, 1958, STEEL.

	Net Orders 1958	Net Orders 1957	Shipments 1958	Shipments 1957
Jan.	1,243	3,310	1,422	3,161
Feb.	1,683	4,161	1,615	2,386
Mar.	2,550	2,360	1,659	2,845
Apr.	1,684	2,429	1,963	3,111
May	1,121	2,340	1,750	2,891
June	2,113	1,936	2,346	2,735
July	1,534	1,943	2,342	3,194
Aug.	1,431	1,501	1,419	2,591
Sept.	....	1,463	....	2,528
Oct.	....	1,933	....	1,953
Nov.	....	1,167	....	2,227
Dec.	....	1,501	....	1,969
Totals	....	26,044	....	31,591

Resistance Welder Manufacturers' Assn.

out 1959. The Chesapeake & Ohio Railway Co. reported that last month was the best September for net income in the road's history. Earnings of all Class I railroads in August rose to the highest level since last October but were below the year-ago figure, says AAR.

Shortage Pending—Howard Freas, chairman of the Interstate Commerce Commission, declares that a 10 per cent increase in loadings next year will cause a shortage of freight cars because the roads have put off ordering new cars at a time when they could get quick delivery. He says that about 8 per cent of the cars owned by Class I roads are in need of repair, vs. only 4.5 per cent a year ago.

There has been a little activity in new car ordering the last few weeks, but it is well below the pace of most recent years. The Union Pacific Railroad ordered 100 piggyback flat cars last week. W. J. Stebler, president of General American Transportation Corp. reports that both inquiries and orders for freight cars have picked up lately. "I think you'll see a bigger pickup in the next 60 to 90 days. If the railroads do not start buying soon, there's going to be a terrific car shortage next year."

Index Equals High Point

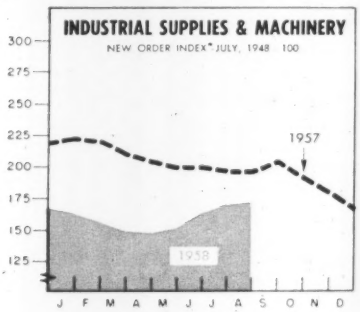
Freight carloadings have been an important factor in keeping STEEL's industrial production index on the upgrade. The index registered a preliminary 139 (1947-49=100) for the week ended Oct. 4, equaling the year's high point for the second consecutive week. Steel output is a plus value, and output of electric power is a neutral factor.

The nation's steel mills were scheduled to produce about 1,930,000 net tons for ingots and castings during the week ended Oct. 12, which would make it the most productive week since the middle of last November. Now that the Big Three auto companies and the union have come to general terms, a steady buildup to at least 75 per cent of capacity is anticipated for the steel industry.

Auto output will remain low until all of the locals come to terms. But each of the Big Three should start their buildups this week. Eventually, they are expected to reach near-record production levels.

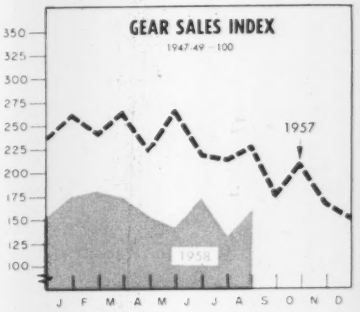
Durables Production Up

The improvement in durable goods production which began in



	1958	1957	1956
Jan.	163	221	190
Feb.	157	219	190
Mar.	149	210	190
Apr.	148	203	195
May	152	199	199
June	164	199	197
July	170	197	203
Aug.	172	197	211
Sept.	...	203	203
Oct.	...	192	206
Nov.	...	180	220
Dec.	...	167	218

*Seasonally adjusted.
Amer. Supply & Machinery Mfrs.' Assn.



	1958	1957	1956	1955
Jan.	174.5	259.3	245.5	140.9
Feb.	179.1	239.5	256.2	148.5
Mar.	173.7	262.4	276.5	172.8
Apr.	153.2	221.7	264.7	179.8
May	142.2	263.2	275.6	205.2
June	173.8	215.9	245.4	193.5
July	133.3	211.4	286.7	201.7
Aug.	162.1	225.8	219.5	217.6
Sept.	....	174.9	230.5	246.5
Oct.	....	207.0	299.8	227.6
Nov.	....	165.3	216.2	210.4
Dec.	....	150.8	235.7	245.5
Avg	....	216.4	254.4	198.3

American Gear Mfrs. Assn.

May continued intact through August, according to the latest figures from the Department of Commerce. Sales in August increased to $12.4 billion from July's $12.3 billion, seasonally adjusted. At the same time, actual orders for durable goods rose about $200 million, but because this was less than the usual July to August advance, they were seasonally adjusted to $12.3 billion from the prior month's $12.5 billion. This was the first seasonal decline since last April.

Manufacturers are still cutting their inventories, but at a slightly slower rate than in the earlier part of the year. And for the first time since the recession began, backlogs of durable goods manufacturers increased slightly to $44.1 billion.

Uptrend Slower in West

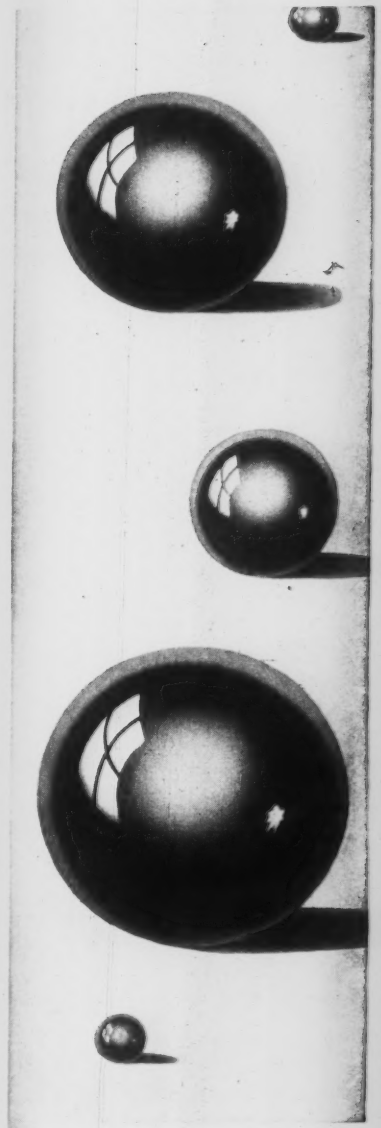
The business recovery does not appear to be as vigorous on the West Coast as it is in many other parts of the country. Part of the reason may be that the recession was not as severe there as elsewhere. The index of business activity for the Security-First National Bank of Los Angeles declined less than 6 per cent and regained almost all of that by August.

But businessmen in the West told STEEL that production in the aircraft and missile industries—two of the biggest out there—is not expected to rise much above present levels in the immediate future. Airframe orders are for less than production runs in many cases, and large missile orders are the exception rather than the rule.

The area's third big industry—electronics—is doing well, but not enough to offset the other two. As one observer put it: "Business appears to be stable but at a level somewhat below that of the last few years."

Builders Break Record

Construction put in place set a record last month when it reached $4,835,000,000, say the Departments of Commerce and Labor. The figure is $32 million higher than the previous mark set in August. It kept the cumulative total for 1958 about 1 per cent ahead of the corresponding 1957 figure. With contract awards for the first 40 weeks of the year running about 8 per cent ahead of the year-ago total, according to latest figures compiled by *Engineering News-Record*, the September record will be short-lived.



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- Carbon Steel Rolls
- Ohioloy Rolls
- Ohioloy "K" Rolls
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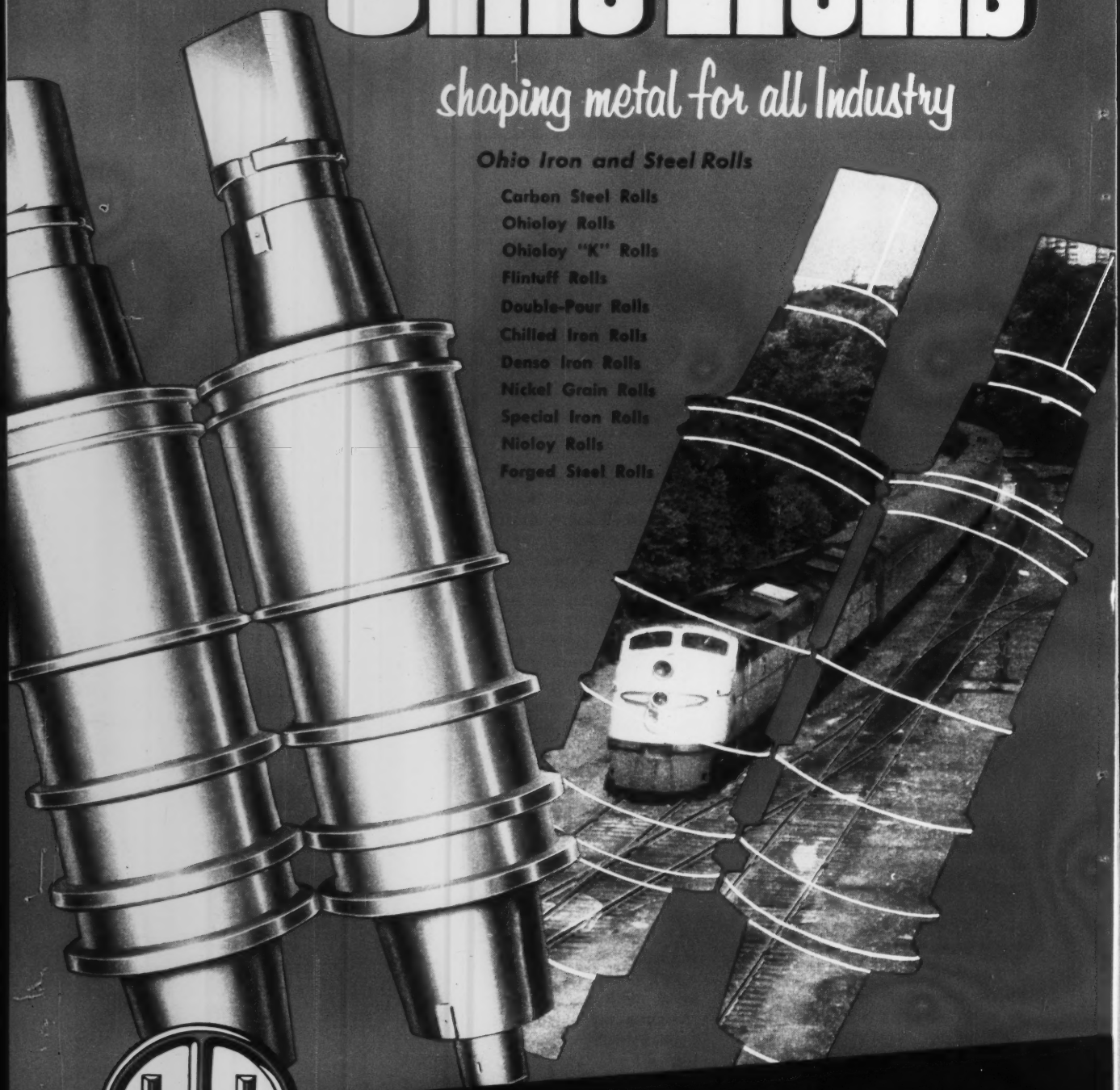
- Double-Pour Rolls
- Chilled Iron Rolls
- Denso Iron Rolls
- Nickel Grain Rolls
- Special Iron Rolls
- Nioloy Rolls
- Forged Steel Rolls



THE OHIO STEEL FOUNDRY CO.

LIMA, OHIO

Plants at Lima and Springfield, Ohio

LIMA... Virtually at the center of the steel industry

OR22

WILLIAM P. HILL
National Steel v. p.-eng.

ROBERT W. KEENAN
Sharon production planning

D. L. DOUGLASS
dir. of marketing at Thew

PETER STEFAN
Wilbur B. Driver post

William P. Hill succeeds **Clarence J. Klein**, retired, as vice president-engineering, **National Steel Corp.**, Pittsburgh. He has been with Bethlehem Steel Co. for 25 years, most recently serving as assistant to the vice president-operations. In that post, he was in charge of engineering programs.

Robert W. Keenan was appointed manager of production planning and control at **Sharon Steel Corp.**, Sharon, Pa. He will supervise systems and procedures used in processing customer requirements.

P. J. Calabrese was appointed sales manager, **Grieve-Hendry Co. Inc.**, Chicago. He was regional sales manager for Cramer Controls Co.; before that industrial market specialist for Minneapolis-Honeywell Regulator Co.

David C. Cannon joined **Disston Div.**, Philadelphia, H. K. Porter Company Inc., as assistant to the general manager. He was vice president-sales at Lawson Mfg. Co.

Ralph Rathyen was promoted to industrial sales manager, **Joseph Dixon Crucible Co.**, Jersey City, N. J., to head sales for three divisions—paints, crucible and refractories, and graphite and lubricants. He was manager of the crucible and refractories division.

J. P. Erwin Niedringhaus was elected vice president in charge of tin plate sales for **Granite City Steel Co.**, Granite City, Ill. He was assistant to the chairman, and manager of tin plate sales.

D. L. Douglass fills the new post of director of marketing for **Thew Shovel Co.**, Lorain, Ohio. He will administer the newly formed marketing division. He was assistant to the president. **M. B. Garber** resigns the post of director of sales (title discontinued). He remains as vice president, and until retirement next year will serve as a marketing consultant, particularly for federal government sales. **J. L. Beltz** moves from director of sales promotion to manager, marketing staff. **J. F. Beles** was made manager of parts and service, Elyria, Ohio.

T. Lewis Thomas III was elected a vice president of **General Smelting Co.**, Philadelphia. He was purchasing manager.

Robert W. Shaneck was named manager of **Anchor Steel & Conveyor Co.'s** new sales office in Dayton, Ohio.

Diamond Alkali Co., Cleveland, named **Henry T. Myers** manager of the purchasing contract section, responsible for construction contracts. **Joseph J. Lint** joined the purchasing department as a staff assistant.

Arthur Raske Jr. was elected president of **Nu-Matic Grinders Inc.**, Cleveland. He was executive vice president.

Chester A. Siver was appointed chief engineer, **Edward Valves Inc.**, East Chicago, Ind., subsidiary of Rockwell Mfg. Co. He was vice president and general manager, controls division, Black, Sivalls & Bryson Inc.

Wilbur B. Driver Co., Newark, N. J., appointed **Peter Stefan** manager-mechanical alloys. He was assistant general sales manager, Riverside-Alloy Metal Div., H. K. Porter Company Inc.

Bertram B. Tower, former vice president-finance, was named president, **American Cable & Radio Corp.**, New York, affiliate of International Telephone & Telegraph Corp. He succeeds **Ellery W. Stone**, now chairman, continuing as chief executive officer.

W. L. Martwick was named president, **Foster Wheeler Corp.**, New York, to succeed **Adm. Earle W. Mills**, now chairman. **John E. Kenney** was appointed executive vice president.

Dale S. Hodges was made assistant sales manager, **Allegheny Steel Band Co.**, Pittsburgh. He was Cincinnati district manager.

Alexander Black joined **Rheem Mfg. Co.'s** defense and technical products division, Downey, Calif., as vice president-sales. **Robert E. Root** continues as division manager-marketing.

Gavin S. Younkin, vice president-general sales manager, Minneapolis-Honeywell Regulator Co., takes over sales direction of its **Datamatic Div.**, Boston.

Wayne H. Bauer was made production manager, **Korhumel Steel & Aluminum Co.**, Minneapolis.

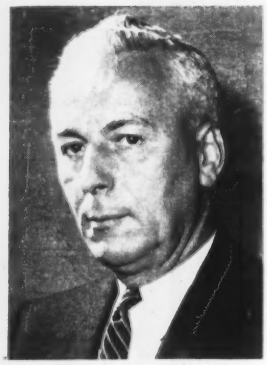
Dale J. Richards was made Detroit

FRED DISCHINGER

HAROLD D. BLAKE

Kolcast plant manager and chief engineer

F. GORDON BENFORD



W. R. YINGST

Allegheny Ludlum Steel works managers

district sales manager, **Beryllium Corp.**

Fred Dischinger was made plant manager of **Kolcast Industries**, Minerva, Ohio, division of Thompson Products Inc. Former chief engineer, he is succeeded by **Harold D. Blake**, who was supervisor of engineering with the Kolcast-Tapco group.

J. E. Smith was elected to the new office of executive vice president of **Smith Welding Equipment Corp.**, Minneapolis. He was head of the research and development program.

J. E. Vaughan was elected president of **Prime Mfg. Co.**, Milwaukee. He replaces **H. G. Wild**, who resigned the presidency to serve as vice president and treasurer.

Fred T. Wilson Jr., assistant sales manager at New Orleans for **Air Reduction Sales Co.**, was promoted to manager. **E. C. Kennedy** succeeds Mr. Wilson.

Leslie J. O'Donoghue was promoted to district manager-automotive products at Detroit for Mobile Hydraulics Div., **Vickers Inc.**, division of Sperry Rand Corp.

George W. Streepey was appointed general manager, raw materials division (formerly the mining division), **Aluminum Co. of America**, Pittsburgh. Mr. Streepey was mining division production manager.

E. F. Winterfeldt was made plant manager, **Bernco Engineering Corp.**, Indianapolis, responsible for manufacturing, maintenance, purchasing, and material control. He was formerly director of purchasing.

F. Gordon Benford was appointed manager, Brackenridge, Pa., Works, **Allegheny Ludlum Steel Corp.**, succeeding **R. T. Eakin**, resigned. **W. R. Yingst** succeeds Mr. Benford as manager of the West Leechburg, Pa., Works.

Clifford A. Sharpe, former vice president-operations, was made senior vice president of **American Bosch Arma Corp.**, Hempstead, N. Y.

Louis A. McGowan was named assistant chief engineer, Barberton, Ohio, division, **Rockwell Mfg. Co.** He was chief engineer, gas meter plant, DuBois, Pa.

R. E. Kleint, formerly of North American Aviation Inc., joined **Ultrasonic Testing & Research Laboratory**, Van Nuys, Calif., as vice president-general manager.

As assistant to the vice president, **R. E. Cunnick** will assist **Graham B. Brown**, recently named vice president-marketing program, Mallory-Sharon Metals Corp., Niles, Ohio. Mr. Cunnick will also serve as steel sales manager, directing marketing and sales in specialty steel products. **G. B. LeVan** was made general sales manager for titanium and special metals; **William G. Fetter**, general sales manager for zirconium. **A. N. Eshman** was put in charge of marketing development for products in the aircraft and missile industry.

John B. Hill was made technical assistant, blast furnace operations, in the steel division of **Bethlehem Steel Co.**, Bethlehem, Pa. He is succeeded by **Edward Ball** as superintendent of blast furnaces at the Lackawanna, N. Y., plant. **Charles W. Felton Jr.** replaces Mr. Ball as assistant blast furnace superintendent.

Haynes Stellite Co., New York, division of Union Carbide Corp., appointed **E. W. Connolly** sales manager, eastern region. He is succeeded as New York district sales manager by **John D. Leslie. John A. Gallaher** was appointed sales manager, western region, and is succeeded as Chicago district sales manager by **Edward L. Shuck.**

John C. Bierwirth was elected a vice president of **National Distillers & Chemical Corp.**, New York. He was assistant treasurer.

Dr. Charles G. Miller was appointed director of research and development of **Isotopes Specialties Co.**, division of Nuclear Corp. of America, New York. He is on leave from the University of California.

Edward P. Fleischer was made assistant to the president, **Consolidated Electrodynamics Corp.**, Pasadena, Calif. He was manager of systems and procedures.

Promotions at **Inland Steel Co.**'s Indiana Harbor Works, East Chicago, Ind., flat products division, include: **Ralph G. Mehler**, named superintendent of the 76-in. and 44-in. hot strip mills, and succeeded as superintendent of the galvanizing department by **John G. Rothfuss**, former assistant superintendent. **John J. Mulligan** succeeds Mr. Rothfuss. **Edward R. Reed**, former assistant superintendent of the No. 3 cold strip mill (nearing

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Your steel service center starts delivery even as you place your order!

In every way, your local steel distributor is geared to keeping production lines rolling.

He's ready to rush the amount, quality, size and shape of steel to meet almost any conceivable demand—on the double. He's your on-the-spot insurance against the plant shutdowns and lost contracts that can be caused by in-plant steel shortages.

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LOUIS B. HABERMAN
Narda Hydraulics v. p.

JOHN E. TILLMAN
CG Electronics plant mgr.

D. CARL BÖCK
new post at U. S. Steel

ROBERT F. COX
A. H. Wirz president

WILLIAM M. O'HARA JR.
Enamelstrip production mgr.

ROY SEGERDAHL
Ford Instrument quality control

completion) became superintendent.

Robert F. Cox succeeds **Mark K. Dresden,** resigned, as president of **A. H. Wirz Inc.,** Chester, Pa. Mr. Cox was vice president-production.

William M. O'Hara Jr. was named production manager, **Enamelstrip Corp.,** Allentown, Pa., division of National Steel Corp. **Joseph L. Cobane** was made sales manager of vinyl-metal laminate products; **Glenn H. Fitch,** sales manager of organic coated products.

Promoted at the Baltimore Division of **Revere Copper & Brass Inc.** are: **Neil K. Besse,** from manager-industrial sales to works manager; **James H. Corrigan Jr.,** from manager-aluminum sales to sales manager; **Leroy Wilson Jr.,** from assistant sales manager-aluminum interdivision sales to manager of industrial sales-aluminum; **James E. Orr Jr.,** from Baltimore district sales manager to manager of industrial sales-copper and brass.

Roy Segerdahl was made manager of the quality control division of **Ford Instrument Co.,** Long Island City, N. Y., division of Sperry Rand Corp. He was assistant chief engineer.

John S. Kline was appointed assistant general manager and chief executive, **Alloy Tube Div.,** Union, N. J., Carpenter Steel Co. He was divisional controller of the tube division, and the Webb Wire Div. at New Brunswick, N. J. **P. L. Coddington,** general manager, Alloy Tube Div., continues in an advisory capacity until retirement next year.

Thomas M. Cole was elected president of **Federal Pacific Electric Co.,** Newark, N. J. He was executive vice president. **Joseph S. Thompson** was named honorary chairman.

Paul A. Florian was appointed director of product planning for **Miehle-Goss-Dexter Inc.,** Chicago, a new post. He was executive assistant to the president of Goss Co., a division.

Louis B. Haberman was appointed vice president and general manager of **Narda Hydraulics Corp.,** Mineola, N. Y., newly formed subsidiary of Narda Microwave Corp. He was general manager, test equipment division, Consolidated Diesel Electric Corp.

John E. Tillman was appointed plant manager of **CG Electronics Corp.,** Albuquerque, N. Mex., division of **Gulton Industries Inc. Joseph P. Ronco** was made sales manager for ceramic cutting tools, Gulton Industries.

D. Carl Buck, as assistant chief metallurgical engineer, was named by **United States Steel Corp.,** Pittsburgh, to co-ordinate the metallurgical and technical aspects of production and customer service activities related to new steels for the missile and aircraft industries.

Russel B. Caples, a vice president of **Anaconda Co.,** New York, will, in addition to other special assignments, co-ordinate and supervise integration of all aluminum interests of the company. He was formerly vice president-metallurgical operations. **William Wraith Jr.,** metallurgical assistant to Mr. Caples, fills the new post of metallurgical manager. **Thomas K. Graham** was advanced to assistant metallurgical manager.

OBITUARIES...

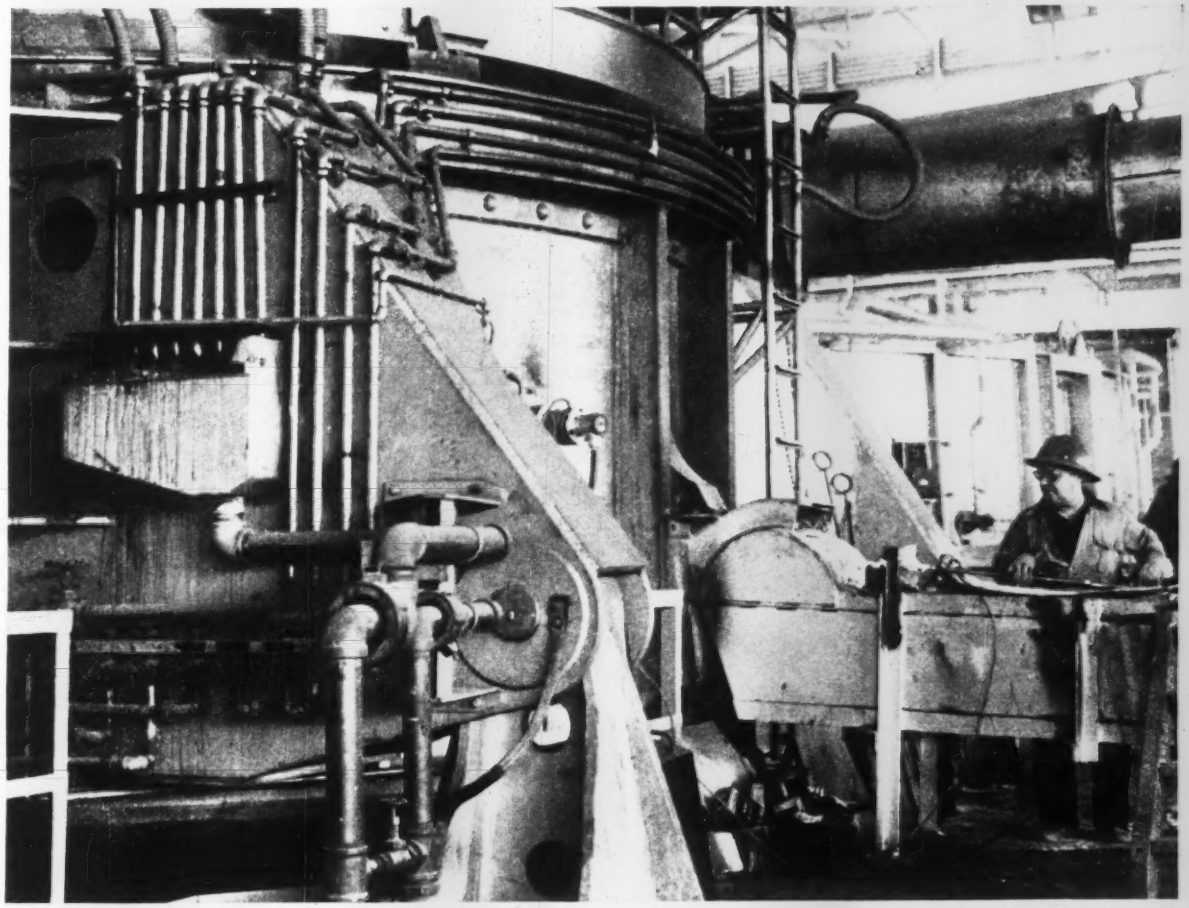
Arthur D. Schultz, 43, chief engineer, stamping division, **Eaton Mfg. Co.,** Cleveland, died Oct. 6.

Dr. Marvin O. Shrader, 45, supervisor of organic chemicals research, **Pittsburgh Coke & Chemical Co.'s** research and development department, Pittsburgh, died Sept. 21.

Brig. Gen. Elmer H. Salzman, 56, director of administration, aeronautical division, **Minneapolis-Honeywell Regulator Co.,** Minneapolis, died Sept. 24.

George H. W. Stone, 65, vice president, **Endicott Forging & Mfg. Co.,** Binghamton, N. Y., died Sept. 27.

James J. Malone, 67, former vice president and general manager, **United Platers Inc.,** Detroit, died Sept. 1.



From the World's Largest Copper-Melting Electric Furnace

TOP QUALITY CASTINGS... ROCK BOTTOM COSTS

Whiting Hydro-Arc Electric Furnace at the Perth Amboy, N. J. plant of American Smelting and Refining Company pours a ton of copper every two minutes—24 hours a day, 7 days a week. Operating costs are competitive, even in this area of high-priced electric power.

Hydro-Arc offers you the *precise* temperature control that assures a top quality product—be it copper, iron, steel, or any other metal or material. You will save money, too, because continuous melting boosts production . . . top-charging reduces downtime . . . simplified design cuts maintenance costs . . . and Hydro-Arc costs less installed than other equipment of equal capacity. For prime melting or duplexing get the facts on Hydro-Arc.

SEND FOR NEW 8-PAGE BULLETIN EF-100 telling all about the electrode arm and clamp which floats on a cushion of air and which is clamped by a cushion of air. Booklet is fully illustrated. *Whiting Corporation, 15643 Lathrop Avenue, Harvey, Illinois.*

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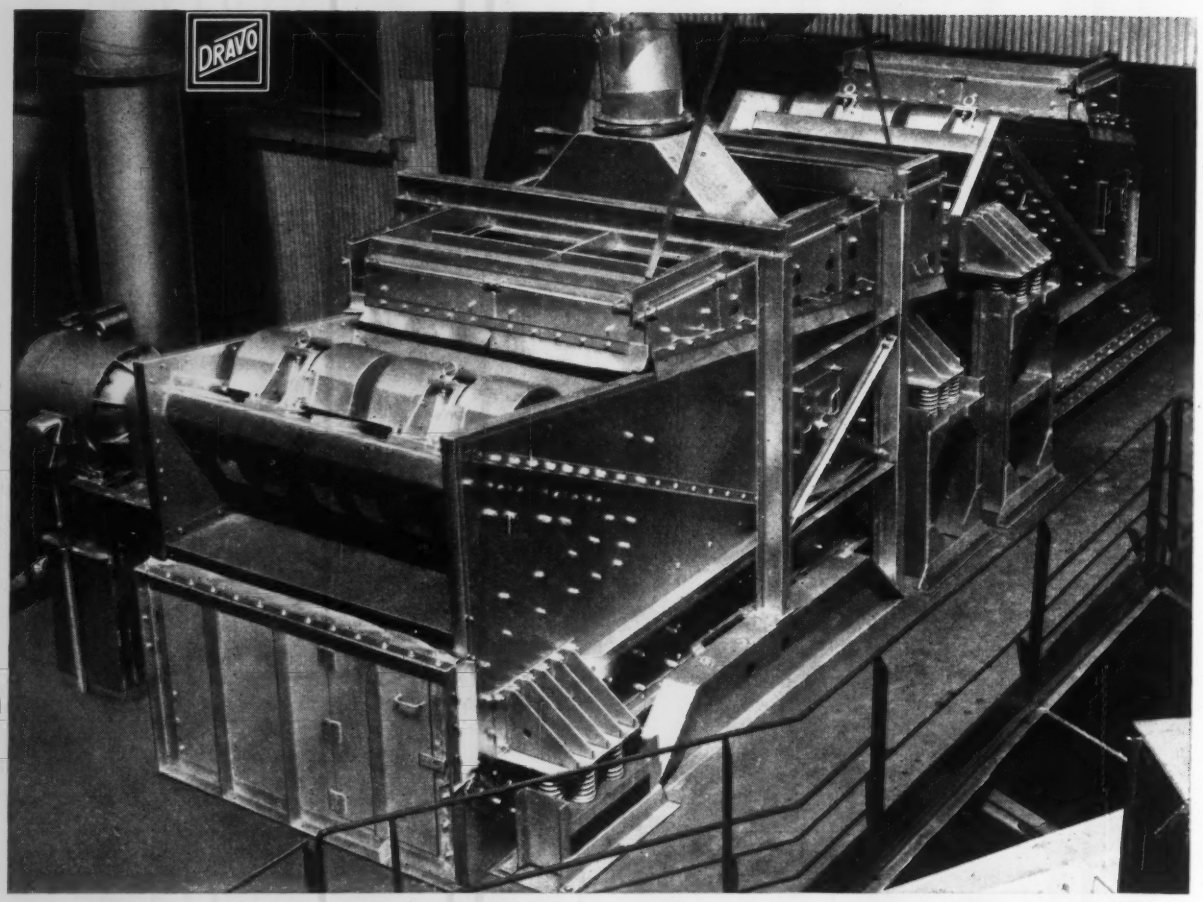


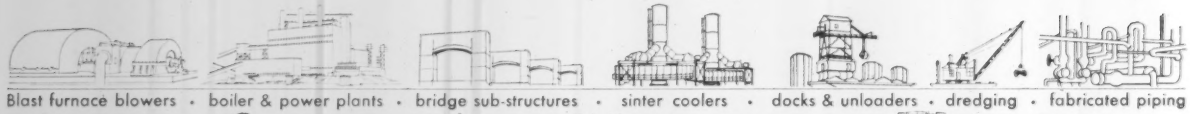
Dravo-Schenck improves handling of hot or abrasive materials

At a recently completed sintering plant, this new type of screen and conveyor moves hot sinter material by a unique principle of high speed mechanical vibration.

This method, now applied to a complete line of feeders, screens and conveyors, minimizes equipment wear on difficult materials handling jobs. These units are now being manufactured by Dravo under license arrangement with Carl Schenck Co. of Germany, Europe's leading maker of such machinery.

Rugged Dravo-Schenck "vibro-conveying" performs well with a variety of materials such as iron and other metallic ores, sinter, chemicals, cement, stone and coal. For more information on Dravo-Schenck "vibro-conveying" equipment or other products and services listed below, write DRAVO CORPORATION, PITTSBURGH 25, PA.

DRAVO
CORPORATION



Blast furnace blowers • boiler & power plants • bridge sub-structures • sinter coolers • docks & unloaders • dredging • fabricated piping

foundations • gantry & floating cranes • gas & oil pumping stations • locks and dams • ore & coal bridges • process equipment • pumphouses & intakes

river sand and gravel • sintering plants • slopes, shafts, tunnels • space heaters • steel grating • towboats, barges, river transportation

TCI Improves Mill

New pickling and continuous annealing lines are being installed at Fairfield Works

TENNESSEE COAL & IRON Div., U. S. Steel Corp., will install a new 54-in. pickling line at its Fairfield, Ala., tin mill.

Since the original equipment was installed when the tin mill was built in 1937-38, the width requirement of customers for sheet and tin plate products has greatly increased, making it necessary to provide processing facilities which can handle wider material, says A. V. Wiebel, president. The new line has been designed to treat strip up to 48 in. wide and will be capable of handling heavier coils and processing strip more efficiently. One of the existing lines will be dismantled.

Pickling equipment at the tin mill consists of two 36-in. wide lines for tin mill products and one 48-in. wide line for sheet mill products.

Coupled with the installation of a continuous annealing line at the tin mill (STEEL, July 28, p. 61), "it will enable us to provide strip, sheet, and tin plate products of improved quality," Mr. Wiebel points out.

Dill Broadens Service

Dill Mfg. Co., Cleveland, has expanded its design and production service and made it available to general industry. The service encompasses engineering and production of small screw machine parts, molded rubber products, cast metal parts, and small stampings. Facilities for precision assembly also are available. The service is offered by Dill's Special Products Div.

AMF Forms Two Divisions

American Machine & Foundry Co., New York, reorganized the two plants of its Leland Electric Co. division in Dayton and Vandalia, Ohio, into two separate divisions. Leland Electric Aircraft Products Div. at Vandalia will engage in research, design, and production of inverters, generators, and other aircraft electrical products. Leland Electric Motor Div. at Dayton designs and makes electrical motors, including gasoline pump motors. Joseph E. Mulheim is general manager at Vandalia; W. T. Buhl at Dayton.

Michaels Enters New Field

Hyman-Michaels Co., Chicago, has organized Michaels International Corp. with main offices at 375 Park Ave., New York, N. Y. The firm will specialize in import and export of steel products, principally structurals and oil tubular goods. E. B. Michaels, president, and Ralph Michaels, vice president and treasurer, will maintain offices in Chicago. Operations in New York will be in charge of C. H. Altholz, A. E. Cates, and Warner Drey, vice presidents.

Doolittle To Head Firm

Space Technology Laboratories Div., Ramo-Wooldridge Corp., Los Angeles, will be established as a separate subsidiary corporation of Thompson Ramo Wooldridge Inc. on Nov. 1. Heading the new firm will be Lieut. Gen. James H. Doolittle (USAF, ret.), who will take office as chairman of the board on Jan. 1.

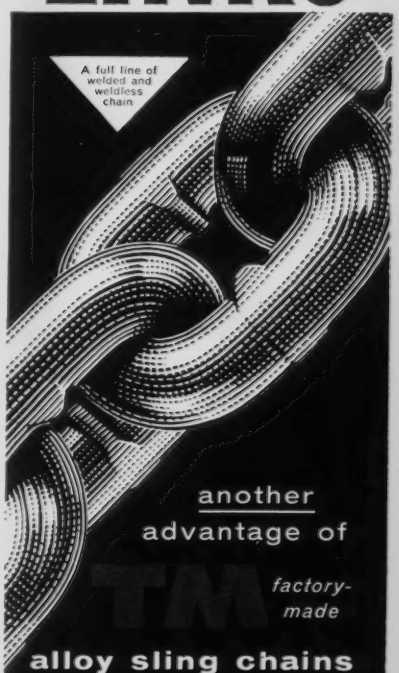
To Make Electronic Parts

Alpine Electronic Components Corp. has been organized on Wolcott Road, Waterbury, Conn. Products will include solder terminals, insulated standoff terminals, and panel and chassis hardware. Officers are: President, T. E. Rowlison; vice president-sales, R. H. Sceery; treasurer, John Iorio; and secretary, Joseph Pagano.

Plans $5 Million Project

Midvale-Heppenstall Co., Nicetown, Philadelphia, Pa., has purchased a 100 ton, arc type, electric furnace to replace acid, open hearth furnaces. Two smaller (50 and 15 tons), arc type, electric furnaces will be moved into a new melting department so that all castings of large ingots will be concentrated. An appropriation of $5 million has been made to cover cost of the project. Other improvements include installation of a vacuum stream de-

STRESS FREE LINKS



another advantage of TM factory-made alloy sling chains

All body links on every size of TM Alloy Chain are electrically flash-welded to form Taylor's exclusive, stress-free links. This method, plus controlled heat-treatment, removes all stress — insures maximum strength and safety. Tayco Hooks ...Taylor's quality control and Test Certificate are other advantages. Get all the facts. Call your distributor or write for Bulletin 13.

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Taylor Made CHAIN SINCE 1873

Now STATIC POWER Adjustable Speed Packaged Drives

No moving parts . . .

Cutler-Hammer *ULTRAFLEX*® *DRIVES* provide outstanding savings in installation—operation—maintenance

No moving parts! Light, compact static power conversion units have replaced the conventional m-g set. Ultraflex Packaged Drives save up to 50% in valuable floor area . . . up to 75% in weight, permitting rapid, low cost installation or rearrangement of production machinery without special handling equipment or floor loading preparations.

No moving parts! Ultraflex Packaged Drives provide a new high standard of operational efficiency and ultra-responsive speed control. Works perfectly without forced ventilation . . . less power wasted as unwanted heat. No power robbing friction or windage losses.

No moving parts! Simple static power conversion units require only a fraction of the time and effort needed to maintain conventional rotating type drives. With Ultraflex, there are no bearings, commutators, or brushes to service. No shafts to align. No couplings to maintain. No inertia loads to balance. No fans or filter to clean or change.

Ultraflex Packaged Drives come complete with operator's station, static power conversion unit, and heavy duty D-c drive motor. Standard Ultraflex Drives provide an 8:1 speed range with wider ranges available upon request. Optional features include dynamic braking, jogging, reversing, tach-generator speed regulation, etc.

Cutler-Hammer also provides a complete engineering service which will custom-design a static powered adjustable speed drive to meet your specific requirements. Get all the facts today, write on your company letterhead for new bulletins EN64-U213 and EN65-U213.
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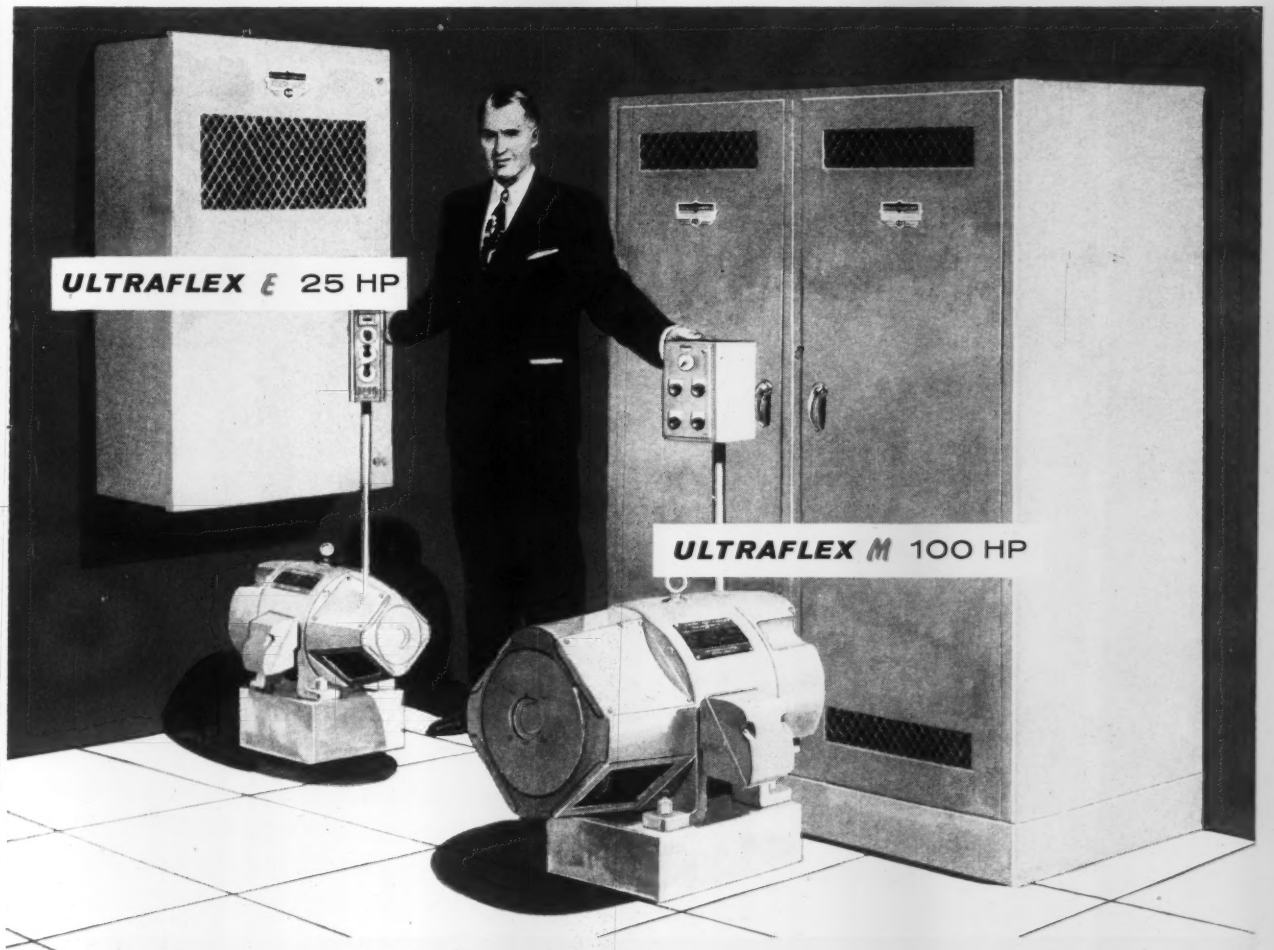


ULTRAFLEX DRIVES Pack More Power per Square Foot... More Power per Pound

HP	CONVENTIONAL m-g DRIVES SQ. FT.	CONVENTIONAL m-g DRIVES LBS.	ULTRAFLEX—E SQ. FT.	ULTRAFLEX—E LBS.
5	3.89	543	Wall Mounted	215
7½	3.89	550	Wall Mounted	215
10	5.44	647	Wall Mounted	215
15	7.0	983	Wall Mounted	330
20	9.5	1830	Wall Mounted	330
25	9.5	1990	Wall Mounted	330
30	9.5	2120	6.46	625
40	13.8	2350	6.46	625

HP	CONVENTIONAL m-g DRIVES SQ. FT.	CONVENTIONAL m-g DRIVES LBS.	ULTRAFLEX—M SQ. FT.	ULTRAFLEX—M LBS.
5	3.89	543	3.5	660
7½	3.89	550	3.5	870
10	5.44	647	3.5	870
15	7.0	983	3.5	1000
20	9.5	1830	3.5	1000
25	9.5	1990	4.5	1250
30	9.5	2120	4.5	1250
40	13.8	2350	4.5	1250
50	17.8	2980	11.7	2200
60	23.3	4070	11.7	2200
75	23.3	4800	11.7	2200
100	25.2	5700	11.7	2400

ULTRAFLEX E 1 HP to 40 HP

Electronic Type Adjustable Speed Drives

Ultraflex E is the simplest, most flexible, most dependable electronic adjustable speed drive on the market today. Heavy duty power tubes have replaced all "radio type" components assuring maximum efficiency and maintenance-free operation. Standard features of design include a closed loop voltage feed back system for accurate voltage regulation, current limit control, and static rectifier field excitation. Compact design permits wall mounting of the control units up to 25 HP.

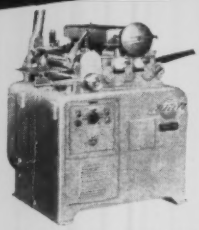
ULTRAFLEX M 1 HP to 200 HP

Magnetic Amplifier Type Adjustable Speed Drives

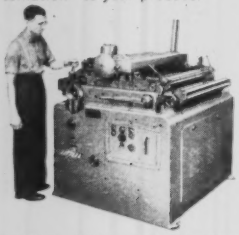
Ultraflex M Packaged Drives set new standards for ultra-efficient, ultra-responsive operation. Fully 15% more efficient than conventional rotating type drives, the static magnetic amplifier power conversion unit avoids all power losses due to friction, windage and the necessity of transferring power across multiple air gaps as in rotating machinery. Standard Ultraflex M drives are equipped with a closed loop voltage feed back system with IR compensation for accurate voltage regulation, current limit control, and static field excitation.

LITTELL

FEEDING-STRAIGHTENING MACHINES



HYDRAULIC RACK AND PINION FEEDING-STRAIGHTENERS, No. 4 HRP Series. 5-roll straightener and hydraulic drive for extra smooth, accurate feeding. Built in three sizes for stock up to .125" thick and maximum widths of 12", 18" and 24" respectively. Standard 19" feed length can be double cycled up to 38". Easily moved about to give "detachable automation" to your presses.



SINGLE RACK AND PINION FEEDING-STRAIGHTENERS, No. 4 Series machines with 3 to 1 Variable Speed Drive have 7-roll straightener and handle stock up to .062" thick. Built in 3 sizes for maximum stock widths of 24", 30" and 38". Feed 38" per cycle with normal feeding speed of 35 strokes per minute.

No. 6 Series machines have 5-straightener rolls, all power driven through a 3 to 1 Reeves Variable Speed Transmission. 4 sizes of these machines handle stock widths up to 36", 48", 60" and 78" respectively and feed up to 72" lengths per cycle. Quick Change Gears, block lubrication and air operated roll release available on all models, standard on most.

F. J. LITTELL MACHINE CO.

4189 N. Ravenswood Ave.
Chicago 13, Illinois
District Offices: Detroit, Cleveland

AUTOMATE

THE PRESS FROM ANY ANGLE

By a single electrical connection, the straightening-feeding cycle of these self-powered Littell machines is synchronized with the stamping cycle of your press. They feed the press or shear accurately from any direction, right to left or front to back. They can be positioned at odd angles to produce odd-shaped parts. They handle a wide range of stock widths and thicknesses. They can be disconnected from your press at will. The smaller machines are easily moved from press to press by fork truck, or temporarily set aside if a job is to be hand fed. Full details on these flexible press feeding machines is available in catalog sections "B".

DELIVERY IS GOOD

From the *larger* Littell plant, equipped to speed production.

LOOK TO LITTELL FOR ROLL FEEDS • SHEETING LINES STRAIGHTENING AND FEEDING MACHINES REELS AND CRADLES FOR COIL STOCK

SEE OUR CATALOG IN SWEET'S

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TO GET FREE CATALOGS.

F. J. Littell Machine Co., 4189 Ravenswood, Chicago 13, Ill.
Send Littell Straightener Catalogs "B"

NAME

COMPANY

STREET

CITY ZONE STATE FM

(*Concluded from Page 77*)

gassing system and construction of a new scrapyard.

Worcester Wire To Build

Worcester Wire Novelty Co., Baltimore, is erecting a 20,000 sq ft plant in the Timonium area, that city. Charles M. Rich is president of the wire fabricating firm.

Maryland Firm Expanding

Aircraft Armaments Inc., Cockeysville, Md., is erecting a 40,000 sq ft addition to its main plant and upon its completion will build a 60,000 sq ft engineering and administrative building. Joel M. Jacobson is vice president and general manager.

Dreis & Krump Builds

Dreis & Krump Mfg. Co., Chicago, is erecting a building to provide more assembly space for its larger press brakes and straight-side-type presses. The building will be completed about Oct. 15.

Glass Beads Corp. Formed

Glass Beads Corp. has been organized in Latrobe, Pa., to produce glass sealing beads used in the manufacture of components and assemblies of electrical and electronic products. Officers include: Chairman, S. H. Stupakoff; president, R. D. Manon; and C. F. Bender, director of research and development.

Bendix Enlarges Plant

Bendix Aviation Corp. is erecting a manufacturing facility next to its main plant at 21820 Wyoming Ave., Detroit 37, Mich. It will provide a 60 per cent increase in floor space for making numerical systems which automatically control machine tools.

Firm To Make Furnaces

Bickley Furnaces Inc. has been organized at 3000 Hedley St., Philadelphia 37, Pa. It will manufacture high-temperature furnaces for ceramic, refractory, steel, metalworking, electronic, aircraft, missile, and nuclear energy fields. The new firm purchased the Remmey

AT A FAMOUS ORDNANCE PLANT IN NORTHERN LOUISIANA:

600-Ton Lubrication Job for Cities Service!

The huge 600-ton press above is one of several at a well known Louisiana ordnance plant operated by the Remington Rand Division of Sperry Rand Corporation.

A big machine, it naturally poses a big lubrication job... but not so big that Cities Service Pacemaker Oil can't take it in stride. With unusually high viscosity index and superior fortification against oxidation, corrosion and rust, Pacemaker is a natural for the task.

Likewise, throughout the various stages of producing artillery shells—the end product—Cities Service lubricants are hard at work.

Clearly, there's little room for error here—either in the product itself or in the machines that make it. That's why Cities Service lubricants were chosen... and it's an equally good reason for making them *your* choice.

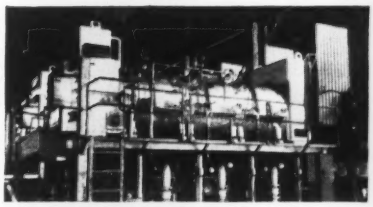
For a survey of your plant's lubrication needs, talk with a Cities Service Lubrication Engineer. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

HOW THE ORDNANCE PLANT USES CITIES SERVICE LUBRICANTS

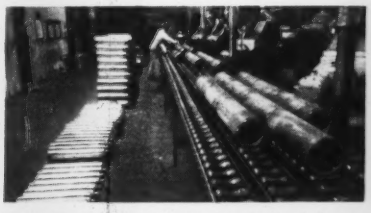
MACHINE	LUBRICANT
Large presses	Pacemaker 3 Hydraulic Oil
Airlines	Pacemaker 1
Speed reduction units	Pacemaker 6
Worm gear reduction units	Optimus 6
Package compressor units	Pacemaker 5
Metal working machines requiring a water soluble cutting oil	Chillo A
General Lubrication	Trojan Gear Oils, Trojan H-2 Grease

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS



High Speed Gas Furnace heats steel to 2660 degrees F. All lubrication is supplied by Cities Service products.



Partially Finished Shells await final forming. Unusual number of forming operations are required to produce final product.

Forming Press does final forming of artillery shells. The press is lubricated by Cities Service Pacemaker Hydraulic Oil.

Choice of the wise buyer who compares...

CM HOISTS

CM METEOR ELECTRIC WIRE ROPE HOIST ½ to 5 ton capacities — Compact, enclosed design. Low headroom. Continuous duty motor with thermal overload protection for heavy duty service. Precision bearings and helical gears for long life. Only 110 volts at push button control. Hook suspension; plain, geared or motor driven trolley.

CM LODESTAR ELECTRIC CHAIN HOIST—⅛ to 1 ton capacities—First truly heavy duty version of small electric hoist. ¼ ton model weighs only 51 lbs. Heavy duty self-adjusting brake, plus exclusive regenerative electrical braking. Upper-lower safety limit switches. CM-Alloy load chain. Single and three phase.

HAND OR ELECTRIC CHAIN OR WIRE ROPE

CM makes them all! So you can choose a hoist that's perfectly suited to your specific needs in a compact, rugged and safe CM design.

CM TROLLEYS AND CRANES

CM CYCLONE Hand Chain Hoist—¼ to 10 ton capacities—Easy to carry. One ton model weighs only 36 pounds. Made of tough aluminum alloy. CM-Alloy load chain. High efficiency. Lifetime lubrication.

CM PULLER—**"The One Man Gang"**—¾ to 6 ton capacities—Lifts or pulls at any angle. Lever handle operation Automatic load brake holds at any point. ¾ ton model weighs only 13 pounds and fits in a tool box. CM-Alloy load chain.

● **FOR OVER 75 YEARS,** Chisholm-Moore has offered hoist buyers the newest and most efficient designs, the most rugged construction, and the greatest number of valuable operating and safety features. CM hoists operate with a very minimum of maintenance. They give years of satisfying service.

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CM HOISTS AND CHAIN

CHISHOLM-MOORE HOIST DIVISION

COLUMBUS McKINNON CHAIN CORPORATION

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In Canada: McKINNON COLUMBUS CHAIN LIMITED, ST. CATHARINES, ONTARIO

Furnace Dept., Richard C. Remmey Son Co., a subsidiary of A. P. Green Fire Brick Co. Officers of the new company include G. Bickley Remmey, president, and Frank M. Smith, general manager.

Thompson Wire Expands

Thompson Wire Co., Sparrows Point, Md., plans to erect a 32,400 sq ft plant and office addition. Additional slitting and auxiliary equipment and a 15-ton traveling crane will be installed. William Dockendorff is manager of this specialty steel strip plant.

NEW PLANTS

An 8000 sq ft aluminum and brass foundry building is being erected by **Chicago Hardware Foundry Co.**, North Chicago, Ill. It will complete the third stage of a three-year expansion program of the firm's Non-Ferrous Div. The first two stages added an aluminum molding and melting building; a $100,000 building for receiving, casting, finishing, and shipping of nonferrous metals; and the installation of new equipment.

Edgcomb Steel Co., Philadelphia, is constructing a metal service center and office at Greensboro, N. C. W. J. Winter has been named vice president and general manager of this operation. Inventories will include carbon sheets, coils, and strip; stainless steel products; aluminum products; tool steels; cold finished and brass bars; tubing; hot-rolled structural steel plates, bars, and shapes.

Vulcan Containers Ltd., Toronto, Ont., will start operations at its new plant in Vancouver, B. C., in early November. This producer of steel shipping pails and drums is a subsidiary of Vulcan Containers Inc., Bellwood, Ill. R. Gregory Brady has been named plant superintendent.

Titeflex Inc., Springfield, Mass., opened its new plant at Santa Monica, Calif., for the production of flexible tubing and ignition shieldings. The plant will be operated by the Titeflex-Pacific Div. The

Entry side of 110-in. 4-high reversing hot mill with underdriven edger designed and built by Loewy-Hydropress for Kaiser Aluminum.

New Loewy 4-high slab and plate mill features automatic adjustment of screwdown, edger, sideguards

Designed for high productivity, automated operation, low maintenance cost, and minimum downtime, this new 110-in. 4-high universal slab and plate mill reaffirms Loewy-Hydropress' position of leadership in forming metal. Programmed punch card operation controls the adjustment of screwdown, edger and sideguards in any required preselected sequence, thus relieving the operator of the many split-second decisions usually required. The edger is an underdriven, close-coupled, vertical unit. Rolls are readily removable without disassembly of spindles or any other associated equipment. Horizontal rolls are easily changed by a motor-driven roll changing sled.

Loewy has also built other mills and auxiliary machinery for the same plant.

Loewy designs and builds special machinery to the most exacting demands, modernizes and rebuilds existing installations, supplies completely equipped new plants. And with the vast facilities of the entire Baldwin-Lima-Hamilton organization at our disposal we can complete your job on time . . . very likely even ahead of schedule. For further information, write us at Dept. B-10.

Loewy-Hydropress Division

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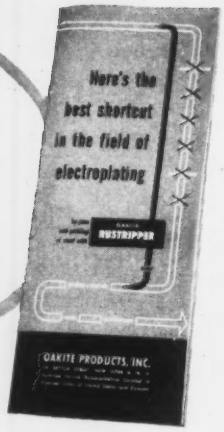
Platers find many uses for chelating *cleaner



*Chelating (pronounced key-lating) cleaners convert metallic salts and oxides into compounds soluble in water.

By chelating and removing rust or heat scale at the same time that it removes oil, Oakite Rustripper combines pickling and alkaline cleaning into one operation. It also avoids disadvantages of acid pickling, such as hydrogen embrittlement and etching of machined surfaces.

Platers now use Rustripper for dozens of difficult steel-cleaning jobs. Here are some examples reported in recent weeks:

CALIFORNIA: "Rustripper has ended pickling damage such as embrittlement." (Removing oil and light rust from machined landing gears before cadmium plating.)

NEW YORK: "Now saving about $10.40 per day on removing rust and scale and producing brighter plate." (Rustripper, added to reverse current cleaner in automatic plating machine, has eliminated separate pickling of wire towel racks before nickel and chrome plating.)

INDIANA: "Rustripper is the best barrel compound we ever used for this job." (Removing tough heat treat scale from steel screws.) "Total cleaning and zinc plating time has been cut in half."

NEW JERSEY: "Only two cleaning rejects in first 15,000 parts plated." (After Rustripper was added to reverse current cleaner in automatic plater to eliminate smut from tubular steel furniture.)

NEW YORK: "Had trouble with light rust on business machine parts before cadmium plating; also with smut left after electrocleaning. Rustripper cured both troubles."

FREE A 14-page illustrated booklet called "*Here's the best shortcut in the field of electroplating*" tells about many ways in which Oakite Rustripper can be of great value in the plating shop. Write to Oakite Products, Inc., 34E Rector St., New York 6, N. Y.

AT THE METAL SHOW

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS · METHODS · SERVICE
SCIENCE

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Technical Service Representatives in Principal Cities of U. S. and Canada
Export Division Cable Address: Oakite

firm is a subsidiary of Atlas Corp., New York.

International Business Machines Corp., New York, dedicated its 570,000 sq ft manufacturing plant at Rochester, Minn. The plant produces machines for IBM's Data Processing Div.

CONSOLIDATIONS

Gabriel Co., Cleveland, acquired **Talco Engineering Corp.**, Mesa, Ariz., producer of missile products. Gabriel makes automotive, communication, and aircraft industry products.

National-Standard Co., Niles, Mich., acquired the operating assets of **Cross Engineering Co.**, Carbondale, Pa., and will operate it as the Cross Perforated Metals plant. Cross products (industrial and aggregate screens, decorative material, and perforated metal) will supplement the line of screening material manufactured at National-Standard's Reynolds Wire Div., Dixon, Ill.

Minneapolis-Honeywell Regulator Co., Minneapolis, purchased **Marion Electrical Instrument Co.**, Manchester, N. H., producer of precision electrical measuring and indicating panel meters and similar products.

Illinois Structural Steel Corp. purchased the steel inventory and unfinished contracts of the **A. F. Anderson Iron Works**, that city. Operations have been moved to 5433 W. Roosevelt Rd., Cicero, Ill. W. H. Krueger is president and general manager of the merged firm. R. C. Carlson is general superintendent.

Permiteco Inc. has been organized at 1100 E. Monument Ave., Dayton 2, Ohio, and has purchased the **Permite Paint Div.** from Aluminum Industries Inc., Cincinnati, and its subsidiary, **Permite Products Co.**, Modesto, Calif. Officers of the new firm are: President, R. Wain Bowman; vice president, L. S. King; secretary-treasurer, J. C. Eismann; assistant to the president, R. J. Pellman; sales manager, Construc-

Here's the answer to your maintenance problems!

Yes, this is a strong statement . . . but we can back it up with this new fully illustrated FREE booklet which shows in detail the latest Maintenance Management techniques . . . so easy to apply to your present maintenance setup. *It is the most comprehensive and thoroughly practical book on Maintenance Management ever produced for American business!*

The system shown in flow chart form in this book, not only assumes responsibility for repair, construction and preventive programs, but includes proper utilization and scheduling of maintenance crafts and control of ever increasing maintenance inventories. It will assist *large* and *small* firms alike in getting *better work control, better planning, better preventive maintenance, better spare parts control, better worker morale* . . . MORE FOR THE MAINTENANCE DOLLAR!

If you have no maintenance management program now, this book will enable you to plan a program from start to finish – one suited to your exact needs. Or, if you have detected areas of weakness in your present setup, then this book will enable you to quickly analyze and correct those particular weaknesses.

Whatever your responsibility in connection with maintenance in your firm you can't afford to be without this book on Maintenance Management. The potential savings in time and money are tremendous! Send coupon Today!

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Room 2034, 315 Fourth Avenue, New York 10.
Kindly send free booklet X1820—"Maintenance Management That Produces More For The Maintenance Dollar."

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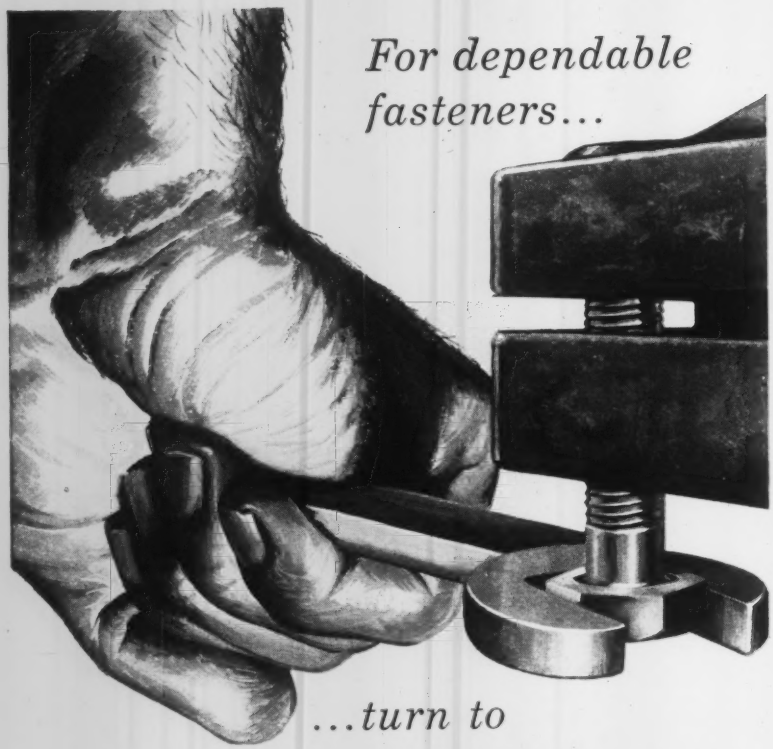
For dependable fasteners...



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PRECISION CAP SCREWS MASS PRODUCED TO YOUR SPECIFICATIONS

Caught in the "profit squeeze" between rising costs and buyer-resistance, more and more manufacturers are turning to Chandler for cold-headed bolts mass-produced at realistic prices.

Chandler's step-by-step production control and rigid inspection standards assure accuracy, precision and uniformity to meet the most exacting specifications. Using high carbon, alloy, super-alloy and stainless steels, Chandler produces top-quality bolts with special heads or threads, drilled heads or shanks for the automotive, engine and aircraft industries.

Check with Chandler today for a quotation on your special bolt requirements.

CHANDLER PRODUCTS CORPORATION

1488 Chardon Road • Cleveland 17, Ohio

Write today for Bulletin 1264-Ch

7914-CH

tion Materials Div., J. W. Hulsbeck; and sales manager, Aluminum Paints Div., R. D. DuVall.

Marquardt Aircraft Co., Van Nuys, Calif., acquired **Associated Missile Products Co.**, a division of American Machine & Foundry Co., New York. The new owner will continue the operations as the Pomona (Calif.) Div. with Dr. W. B. Sell as general manager.

ASSOCIATIONS

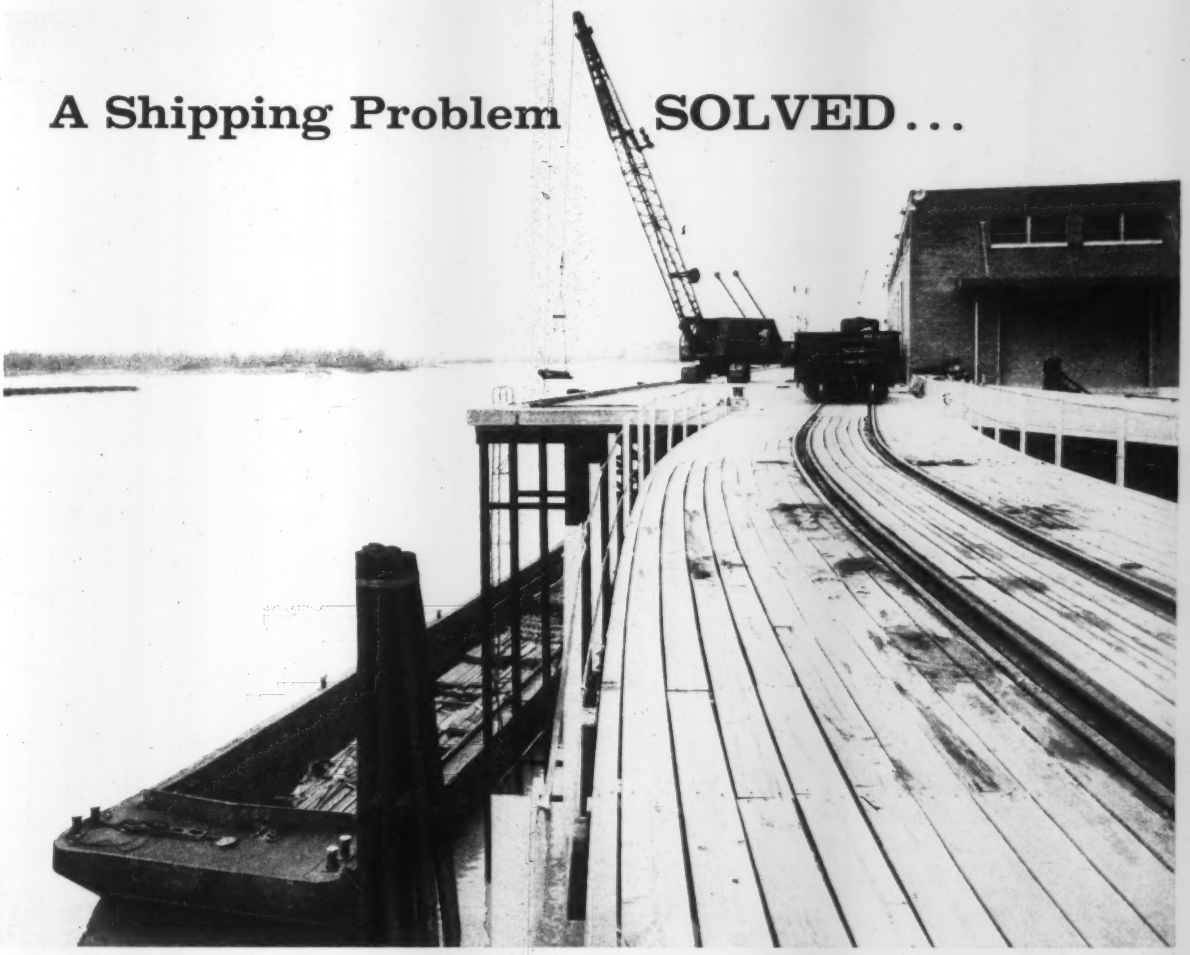
Pressed Metal Institute, Cleveland, elected these officers: President, C. C. Higgins, Worcester Pressed Steel Co., Worcester, Mass.; vice presidents, F. F. Rimmler, Volkert Stampings Inc., Queens Village, N. Y., and M. A. Sherwood, Grand Haven Stamped Products, Grand Haven, Mich.; secretary-treasurer, Melvin Lorentz, HPL Mfg. Co., Cleveland; and honorary secretary-treasurer, W. B. Gemmill, American Stamping Co., Cleveland.

Porcelain Enamel Institute, Washington, elected these officers: Chairman, J. W. Vicary, Ervite Corp., Erie, Pa.; president, R. N. Smith, Temco Inc., Nashville, Tenn.; vice presidents, A. S. Ault, Chicago Vitreous Corp., Chicago, W. H. Lowry, Vitreous Steel Products Co., Cleveland, H. V. Penton, California Metal Enameling Co., Los Angeles, and H. A. Ringelberg, Challenge Stamping & Porcelain Co., Grand Haven, Mich.; treasurer, P. B. McBride, Porcelain Metals Corp., Louisville; immediate past president, Glenn A. Hutt, Ferro Corp., Cleveland; and managing director and secretary, John C. Oliver.

Wallace R. Harper has been named assistant executive vice president of the **American Institute of Steel Construction**, New York. N. P. Hayes is president.

David B. Carson resigned as chairman of the Committee of Stainless Steel Producers, **American Iron & Steel Institute**, New York. Mr. Carson retired at the end of September as executive vice president of Sharon Steel Corp., Sharon, Pa.

A Shipping Problem SOLVED...



...at MEMPHIS, Crossroads of materials and markets

If the South, Southeast, Southwest or Mid-West is all or part of your market for metals, metal products or machinery, then you should seriously consider Memphis, Tennessee, in your expansion or re-location plans. Here's why:

MEMPHIS is an inland port and transportation center.

MEMPHIS is the geographic center of a 17-state market.

MEMPHIS offers second morning or better delivery to these 17 states by rail or truck.

MEMPHIS Port is served by five barge lines operating scheduled service to all navigable points on the Mississippi, Missouri, Illinois, Tennessee, Ohio and secondary rivers; and to shipside at the Gulf of Mexico.

MEMPHIS Port facilities are served by 91 motor freight lines reaching all 48 states, Canada and Mexico.

MEMPHIS Port rail facilities connect directly with eight trunk line railroads having 17 radiating lines to provide direct one-line service to 25 states.

MEMPHIS has more than 11,500 acres available in planned industrial districts.

MEMPHIS utility rates are among the lowest in the nation.

MEMPHIS is an excellent labor market, has an advantageous tax structure for industry, has sound, stable government and is a fine place to live.

Join the 39 firms which have located in the 7,800 acre Memphis Harbor and Industrial Area where 7,200 acres are still available including property with and without water frontage.

Memphis—Crossroads of Materials and Markets

Investigate Memphis TODAY

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MEMPHIS INDUSTRIAL DEVELOPMENT COMMITTEE

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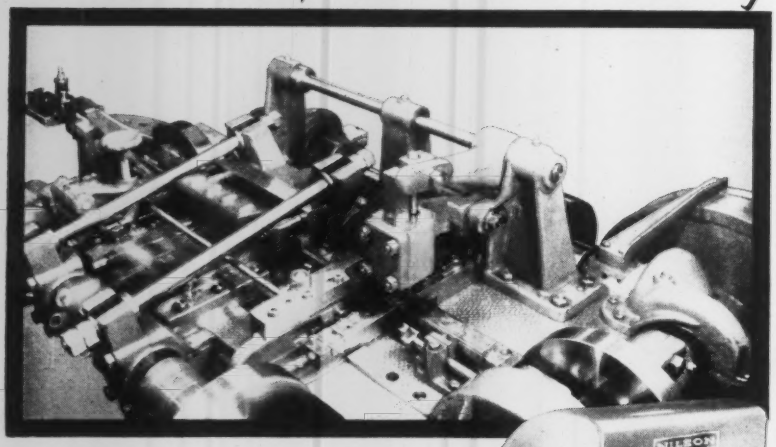
FORMING PRODUCTION PROFITS... *Automatically*



WHY

Cost-Conscious Companies

CHOOSE A NILSON

Every Nilson 4-Slide Forming Machine is designed with built-in flexibility! Most models handle either wire or ribbon metal with equal speed and accuracy . . . can combine stamping, welding and other secondary operations with the basic forming cycle. Easy access to tooling insures rapid setups, minimum down-time for job changeovers.

Whatever your forming application, there's a Nilson 4-Slide to do the work faster, more economically! With 17 horizontal models and the new "Vertiform" machine, Nilson offers you the widest selection of 4-slide equipment.

Investigate the cost-cutting advantages of Nilson 4-Slides in your operations! For a production evaluation of your parts, send prints or samples today.

Illustrated at top is Model S-1-F Machine, showing built-in press and open construction of forming area. Directly above is the new Vertiform Machine.

SIZE RANGES:
Wire up to ½" diameter
Ribbon stock to 3½" wide
Feeds up to 32"
5 TO 75 TON
PRESS SECTIONS

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THE A. H. NILSON MACHINE CO.
1507 Bridgeport Avenue • Shelton, Conn.

AUTOMATIC WIRE & RIBBON METAL FORMING 4-SLIDE MACHINES • WIRE & STOCK REELS • WIRE STRAIGHTENING EQUIPMENT • AUTOMATIC STAPLE FORMING MACHINES • SPECIAL WIRE FORMING EQUIPMENT

Coming Nov. 17

Get Ready For the New Boom

All forecasts point to great economic gains in the 1960s that may make the 1950s look like lean years. But there will be important differences between the booms of the two decades.

Industry will not be caught short of capacity, as in the early 1950s. The new prosperity will be even more competitive than that of the 1950s. The wise manufacturer will begin to plan his products, his marketing setup, his management organization, and his plant facilities to make maximum profits during the coming decade.

The tenth in STEEL's 1958 Program for Management will tell how.

Published so far in the series:

1. **Balancing Management for Profit (Feb. 17, p. 113)**
2. **Production Control for Profits (Mar. 17, p. 83)**
3. **Managing Defensework for Profit (Apr. 14, p. 125)**
4. **Building a Labor Contract (May 19, p. 125)**
5. **Pricing for Profit (June 16, p. 87)**
6. **Finding Out What Customers Will Buy (July 14, p. 101)**
7. **Surveying the Market (Aug. 18, p. 85)**
8. **Building Marketing Men (Sept. 22, p. 69)**
9. **Purchasing for Profit (Oct. 13, p. 89)**

Extra personal copies of these Program for Management articles are available until the supply is exhausted. Write: Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.

Purchasing for Profit

SAM SMART needed a new car. He waited for a big deal and picked up a $2400 model for $2000. That's the most elementary form of purchasing for profit: Buying at the right time, at the right price, from the right supplier.

Sam didn't stop there. He got a one-year guarantee on parts, a promise of free service for a year, and an offer of free lubrication during the life of the car. He was carrying profitable purchasing a step farther: Planned buying to eliminate future expenditures. Sam was increasing his disposable income.

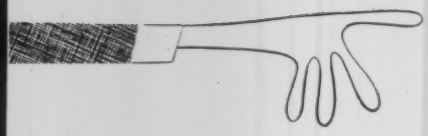
The moral: Metalworking management can do as well as Sam. Purchasing can become a profit-making function if it has the right caliber of people; a management that encourages initiative and delegates responsibility; and equality with other departments. How well management heeds this axiom may determine the color of ink used in yearend profit and loss statements because better than 50 per cent of the average company's dollar outlay goes to procure equipment, materials, and supplies.

Measure your purchasing operation with this definition by John A. Hill, president of Air Reduction Co. Inc., New York: "The modern purchasing department is no longer just a buyer of things the company needs. It is a full partner with the other departments of the business. It supplies the management team with an expert knowledge of economic and market conditions, as well as of materials and venders, which is vital to effective planning and programming."

The New Look

Today's progressive purchasing departments are improving performance by utilizing value analysis, make-or-buy criteria, standardization, substitution, blanket orders, economic lot formulas, vender meetings, purchasing research, form analysis, vender rating systems, and automation.

Purchasing is moving even farther away from its traditional role. Some purchasing departments are



Pinpointing Purchasing's Scope

Primary Responsibilities:

1. The direct responsibility for the purchase of raw and other materials, equipment, supplies, and services (in a free, competitive market) . . . of the required quality, at the lowest cost at point of use, and in time to meet scheduled requirements.
2. The development of satisfactory sources of supply and the assurance of a continuous supply of goods and services.
3. The determination of standards for use in obtaining competitive bids or quotations.
4. The negotiation of purchases with suppliers and the execution of commitments and contracts.
5. The interpretation of economic and market conditions and price trends in terms of their effect on specific commodities.
6. The locating of new products or new designs.
7. Informing management of important economic changes and purchasing market developments that would effect basic costs.
8. The determination of purchasing policy.
9. The establishment of satisfactory relations with suppliers.
10. Assist in the development and execution of trade relation decisions.

Secondary Responsibilities:

1. The establishment of proper procedures and adequate controls.
2. The maintenance of adequate purchasing records.
3. Following up, inspecting, and expediting deliveries, materials, and equipment to meet operating and construction schedules.
4. Assistance in the development of specifications.
5. The development of material standards.

American Cyanamid Co.

responsible for traffic. Others are responsible for inventory control. More and more purchasing people are taking to the road to evaluate facilities of venders.

"With this change in concept purchasing has taken on a new look and is playing a greater role in management decision making," says Donald Hoodes, director of the management advisory service division, Profit Counselors Inc., New York. "Purchasing has always been the link that connected a company with its outside sources of supply. Now the function is becoming more important as the guardian of all material costs."

Many students of purchasing foresee another advance: The concept of the purchasing agent as a manager of materials (some companies already have such a title). Under this plan, the purchasing department has a part in the establishment and control of inventories; the establishment of standards for material specifications; the introduction and control of engineering changes; the predicting, planning, and scheduling of material requirements; the determination and disposal of surplus and obsolete materials; plus dispatching, material handling, and perhaps shipping.

If you're finding it difficult to compete at a profit, investigate getting more mileage from purchasing. The stakes are high.

Check These Opportunities

Here are the most fruitful areas for cost reduction.

1. Look beyond the purchase cost of an item. Check on tooling fees, freight charges, cash discounts (many companies will grant discounts if asked although they do not advertise the practice).

2. Investigate substitution of less costly materials than those specified which will do the job without impairing required quality.

3. Pay close attention to quantity discounts. You may be able to buy 50 per cent more than the requisition specifies for 10 per cent more dollars.

4. Manage inventories for profit. Determine economical ordering quantities: Keep enough material on hand and still not have an excess that will tie up capital.

5. Encourage production, engineering, and design to standardize material and part specifications. You'll benefit by getting less costly materials, quantity discounts, and more venders to choose from.

6. Reduce vender prices through negotiation.

7. Make more thorough use of cost analysis in every phase of the purchasing function.

8. Put more emphasis on routing and transportation. Seek suppliers closer to the home plant if you are footing the freight bills. Schedule shipments to avoid demurrage charges. Have materials unloaded nearest the point where they will be used or stored to eliminate unnecessary in-plant material handling.

9. Check packaging when buying. It might be economical to palletize for automated handling. Buy in containers you can re-use. Investigate shipping in cardboard instead of wood containers to hold down freight fees.

10. Develop new buying sources. Savings can be fantastic. ACF Industries Inc. was able to purchase a forging for 75 per cent less by switching suppliers. Other purchasing men say it's not uncommon to find a difference of 100 per cent among quotations.

11. Make recommendations to switch from buying to making or making to buying when it's more economical to do so.

12. Time purchases judiciously

to take advantage of market conditions and price fluctuations.

13. Simplify internal purchasing. Examples: Elimination of excess forms and unneeded records, order writing simplification, ganging up of orders. (Trundle Consultants Inc., Cleveland, estimates it costs $10 to $15 to merely place an order, regardless of its size.)

Some Results

Here's how some purchasing men are translating cost saving opportunities into dollars.

A New York company's purchasing department received a request from engineering to buy some pressure vessels. Estimated cost was $600,000. The engineering specifications called for a joint efficiency of 95 per cent which would require x-raying and stress relieving. Purchasing suggested: Have the plates beefed up and reduce joint efficiency to 80 per cent to eliminate the need for x-raying and stress relieving.

Result: Savings of $110,000.

R. O. Keefer, Aluminum Co. of America's vice president and general purchasing manager, gives this example: The Massena, N. Y., plant is a large user of fuel oil. Formerly, oil was transported 250 miles by rail, then 40 miles by truck to the plant. Purchasing went to a small oil company nearby and suggested the erection of a terminal on the banks of a navigable river close to the Alcoa plant. Result: The arrangement, which cost Alcoa nothing, saved it $50,000 the first year and $100,000 the second.

Dramatic examples like those don't come every day. The "small situations" offer the major opportunities.

William Old, director of purchasing for Babcock & Wilcox Co., New York, cites two typical cases where his department suggested profitable changes:

An expensive alloy wire was used in boiler insulation. Type 330 stainless was substituted. Savings: $8000 yearly. In another instance, 22 gage carbon steel containers were substituted for 20 gage containers. Savings: $5000 annually.

A buyer at Westinghouse Electric Corp., Pittsburgh, was looking over a list of new prices for phenolic molding compounds last November when he noticed that the package differential between drums was changed from 0.5 to 0.75 cent a pound. He asked the molding department to switch from drums to bags. Savings to date: $9577. Added benefits: The palletized bags have made unloading, storing, and handling much easier.

Formulate a Program

Such activity is a vital part of today's purchasing function. But in all too many cases it's on a helter-skelter basis. Here's a possible explanation offered by Gailon C. Fordyce, assistant director of purchases, American Cyanamid Co., New York:

"Through lack of knowledge, guidance or interest, or perhaps lack of time, the buyer may be passing up cost reduction possibilities. It's important to establish the best organizational climate, then start

Make Purchasing a Partner

MANAGEMENT has only started to tap the potentials of purchasing, believes John A. Hill, president of Air Reduction Co. Inc., New York. Long an outspoken advocate of upgrading the purchasing concept, he lists these principles as essential if purchasing is to operate at maximum efficiency:

1. Purchasing is not a service function but a profitmaking activity.

2. Where materials are a large part of total cost, procurement is best handled as a separate and distinct function reporting directly to the chief executive or to some other top level operating executive.

3. The real purchasing job starts long before the specifications or requisitions are written.

4. Purchasing needs and deserves highly trained, competent personnel on a par with any other department of the business.

5. Purchasing should be represented in top operating councils.

to acclimate the buying personnel. The buyer must first be given the responsibility. He must feel that he has the obligation and the prerogative to purchase materials in a manner that will be in the best interests of the company. Too often he is made to feel that he is being told what to buy and where."

Mr. Fordyce suggests these ways to spark the buyer:

- Set up a cost reduction program with a definite goal.
- Define areas of cost reduction, suggest ways to do the job, and set up a program for the interchange of ideas.
- Follow up on projects—realization of cost reduction or abandonment.
- Give recognition for better than average performance with some type award.
- Bring the accomplishments of buyers to the attention of the top purchasing executive.

Organize for Profit

It's not enough to know how to function for profit. If a purchasing department is to operate anywhere near peak efficiency, it must occupy a proper place in the company's organizational chart and be effectively organized.

Organizational setups vary widely, but the most successful purchasing operations have several things in common:

Purchasing is an independent department, reporting to top management.

Purchasing is on the same level with other departments, and the purchasing director has the same status as other department heads.

The purchasing director is a member of the management team and sits in on top level meetings.

Purchasing has a voice in planning as well as the execution of plans.

Purchasing constantly analyzes its operations by asking: Is the department properly organized to achieve its objectives? Is there too little or too much supervision? Do duties overlap or duplicate? Is the organization geared to meet management's requirements for such things as bidding, record keeping, and reciprocity? Can it produce the kind of reports management wants?

Centralize or Decentralize?

This is one of the big decisions in any multiplant operation: Whether to centralize or decentralize the buying function.

The trend in recent years has been toward decentralized purchasing with centralized control. The home office sets policy and procedure, usually does some buying, and backs up the plant operation in an advisory capacity.

Advocates of centralized buying cite these advantages: Trained buyers specialize in a particular item; you have the opportunity to buy in larger quantities; and plants are not competing with each other for scarce items. Other benefits include: Centralized disposal of surpluses, more sources of supply, standardization of purchases, over-all inventory control, lower operating costs.

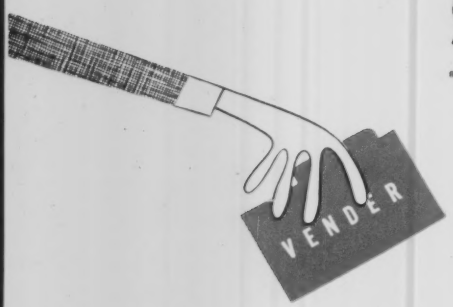
Proponents of decentralization claim: Buying locally creates better community relations, faster action, leaves home office free to research new tools for purchasing, builds up plant purchasing people for higher duties, allows better selection of suppliers, is often less expensive.

Pick the Right Man

Once you've clearly defined your purchasing objectives and organized the department for maximum efficiency, one more question must be answered: What type man do you want in your purchasing department?

A profile: He's probably a college graduate—ideally with engineering-liberal arts or engineering-business administration training. Like Ivory soap, he should be 99.44 per cent pure. He needs the tact and finesse

Select Venders for Profit



Most Important:

Quality—Can he consistently produce the quality required?

Price—Check on discounts, terms, shipping charges, allowances, escalation conditions, warranties, possible extras such as tooling bills.

Delivery—Will he deliver when needed so production schedules can be met and yet not ship too early and tie up inventory dollars?

But Don't Overlook:

Industry knowhow.
Research and development facilities.
Application engineering assistance.
Service engineering.
Quick repair service.

Check These Factors:

Management policies.
Labor conditions, past and present.
Credit and financial rating.
Willingness to maintain adequate records for audit.
Suitability of production capacity.

How GE Evaluates Venders

Haphazard vender selection can hamstring a company's production and profits. General Electric Co. has developed an "Incoming Material Rating Plan" to take the guesswork out of choosing the right vender to fill a particular need.

Explains Charles B. Adams, manager, purchasing service: "Many of the excess costs in material expenditures are the result of poor vender selection. Our objective is to evaluate suppliers of selected items (as contrasted with the across-the-board approach) by means of a rating system based on quality, price, and service."

How it works: Quality control compiles a list of purchased items which are troublesome in terms of quality. Purchasing develops a similar list of items which are troublesome in terms of service or price. Suppliers are rated on a numerical point system, which shows how well they performed over a specified period.

A perfect score is 100. In the simplified example here, up to 40 points are awarded for quality, 25 for service, and 35 for price (the weighting can be shifted in favor of service or price, depending on which is most critical, as long as points total 100).

	Vender A	Vender B	Vender C
QUALITY	**60 out of 60 lots acceptable. Score: 100% or 40 points.**	**54 out of 60 lots acceptable. Score: 90% or 36 points.**	**48 out of 60 lots acceptable. Score: 80% or 32 points.**
SERVICE	**48 of 60 delivery promises kept. Score: 80% or 20 points.**	**60 of 60 delivery promises kept. Score: 100% or 25 points.**	**54 of 60 delivery promises kept. Score: 90% or 22.5 points.**
PRICE	**$0.93 Score: 35 points.**	**$1.16 Score: $1.16 into $0.93 = 80% or 28 points.**	**$1.23 Score: $1.23 into $0.93 = 76% or 26.6 points.**
Rating	**95**	**89**	**81.1**

of a diplomat, the curiosity and analytical judgment of a Sherlock Holmes, and the social attributes of a Dale Carnegie. He should have a thorough knowledge of materials and venders and an intimate understanding of engineering, production, and planning.

How do you find such a man?

Purchasing agents are made, not born, so you may have to grow your own. The man must come equipped with the right kind of personality, but the special knowledge can be acquired.

Part-time college attendance offers a good way to train. "Purchasing courses are now offered in more than 300 U. S. universities," says Howard Ahl, executive secretary of the National Association of Purchasing Agents. Some local chapters of the NAPA offer evening courses, and organizations like the American Management Association run seminars.

On-the-job training can't be duplicated. Many companies have set up formal programs. For example, American Cyanamid has a buyer-trainee program to train and orient recent college graduates. It is backstopped by individual training in the home office and trips to company plants and laboratories. Group participation seminars are held several times yearly for the discussion of current subjects.

Choose Right Vender

The steps in vender selection are described this way by Charles B. Adams, manager of purchasing service, General Electric Co.: "Regardless of the product, a buyer is first purchasing a function. Whatever it is designed to do, the product he receives is valuable to him only if it performs its function. The second requirement he is buying is quality. If he is purchasing in quantity, he doesn't want to risk a delay in his production line because many of the incoming materials have to be rejected. Third, he is buying service and reliability. Last, and this point is equally important, he is

Make Or Buy . . .

'It's Cheaper To Buy' . . . C. C. Caditz

president, Northern Metal Products Co., Franklin Park, Ill.

"Make or buy represents one of the greatest, if not the greatest, area for a cost reduction program," says Mr. Caditz. "Most of the cost saving opportunities exist in changing from making to buying or in preventing changes from buying to making."

Explains Mr. Caditz: "Let us suppose that in setting up identical facilities a manufacturer has the knowhow and skills comparable to the best of the specialist companies and that he can immediately produce at their level of efficiency. Yet, there are still inherent and invisible differences which will drastically influence his cost structure.

"First, the captive operation is only a small part of a larger organization whose main production interests are elsewhere.

"Second, the captive operation has only one customer—the manufacturer.

"Third, the manufacturer has only one supplier—the captive operation itself.

"Fourth, the captive operation is not run by an entrepreneur.

"Remember that every part used is bought—whether through the medium of a purchase order or a production order—through a purchasing agent or a plant manager."

seeking the best possible price."

Continues Mr. Adams: "Take the case of a buyer who is purchasing 1000 special cage fans for a generator powerpack. Among many bids, he receives one which is substantially lower than the others. He awards the contract and is congratulating himself when the supplier informs him that he will have to accept extra tooling costs to receive the quantity ordered on schedule. The buyer's leadtime is already gone. To change suppliers would mean serious delay. Regardless of his ultimate decision, the buyer has been mousetrapped—he has lost money through what appeared to be a good bargain."

The moral: Put vender selection on a scientific basis. Investigate every angle before you buy (see exhibit on Page 92). Set up a system for evaluating vender performance (see Page 93 for discussion of how GE does it).

Negotiate the Price

Hand in hand with vender selection goes a relatively new purchasing tool called negotiated buying. Simply put, it's the use of price and cost analysis techniques to check the reliability of vender quotations and to serve as the basis for price negotiations.

Frequently, quotations include a number of contingencies. For instance, you might be paying for service engineering you'll never use or a guarantee you won't need. Suggests Mr. Adams: "Treat contingencies as a separate package. Meet them as they come. Then you have true cost of product."

Put VA To Work

Of all the cost saving tools in the purchasing man's workshop, value analysis is probably the most important. It can be applied to virtually every function associated with purchasing. Profit Counselors' William Pinney gives it this definition: "How can we make a better product for less money?"

Using value analysis techniques, purchasing agents for Rockwell Mfg. Co., Pittsburgh, saved the company $325,000 in the first eight months of this year. Here are two examples:

One of the Rockwell plants formerly purchased abrasive belts cut to a special narrow width. By purchasing standard belts and cutting them in its own plant, Rockwell saves over $17,000 annually.

At another Rockwell plant, the

Which Road to Profit?

'The More We Make the Better' . . . John T. Romano

vice president, Federal Pacific Electric Co., Newark, N. J.

Federal now makes more than it buys, and we plan to make more and more. Our ultimate ideal would be to make practically everything," says Mr. Romano.

Federal's philosophy is that it can give its customers better service by making. Says Mr. Romano: "The fact we can make a part cheaper than we can buy it is actually a secondary factor with us. We are interested in having the part available when we need it, in maintaining close quality control, in holding down inventories, and in turning storage space into manufacturing space."

One example: Federal uses a plastic compound for casings and interior parts of its circuit breakers. Vender deliveries were unsatisfactory, and the company had to invest heavily in inventory to guarantee unbroken production. The company purchased its own molding equipment and now supplies all its plants with molded parts. (It also does its own mixing and grinding.) Results: Inventory investment is less than it was; storage space is released to manufacturing; production tieups are eliminated; and savings in the cost of the part itself come to 40 per cent.

Mr. Romano says it's profitable to make if: 1. Volume justifies it. 2. You are having trouble with quality. 3. Service is poor. 4. Not too large an investment is required. 5. The product is compatible with engineering knowhow and available plant space. 6. You have personnel that can do the work.

purchasing department eliminated one supplier and let another do both the casting and machining of valve wormgear brackets. With the cost of the new tooling deducted, the saving per unit was $1.51, or 14 per cent.

A midwestern firm formerly made an electrical terminal as a screw machine part at a cost of $136 per thousand. The company found that by retooling at a cost $1000 the part could be made as a stamping. Savings: $11,000 annually.

Babcock & Wilcox formerly shipped boiler components in boxes. Purchasing pioneered a change to wire bound shipping containers. Result: Lower material, labor, and shipping costs have resulted in savings of $40,000.

Value analysis programs can be as complex and far reaching as you want to make them. For a start, check these standards against every item you make or buy: 1. Could we use it as well or better if it were made from a cheaper material? 2. Can we eliminate a part? 3. Can we simplify production procedures? 4. Can we use a standard part instead of a special?

Don't forget the fringe areas of purchasing in your value analysis program, suggests Mr. Pinney. He's referring to such purchases as office equipment and supplies, cleaning and maintenance materials, sanitary supplies, and services.

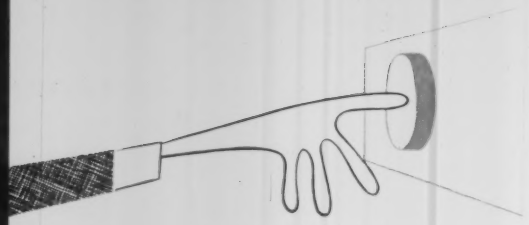
There's one big limitation to value analysis. It only works after a product has been made. That limitation has led to a new concept called preproduction purchase analysis. In essence it's applying the principles of value analysis to an item before it's made. The theory: Why wait years to realize savings?

Make or Buy?

Both make and buy advocates can present strong arguments for their positions (see examples, left and right, above).

The committee approach to make-or-buy decisions is increasing in popularity. At ACF Industries the committee is headed by the manager of product projects and includes representatives of purchasing, engineering, estimating, manufacturing, accounting, and patents, says John H. Snyder, assistant to the vice president of purchases.

How it works: Purchasing compiles a list of items being bought. Each one is analyzed to see if it can be more profitably made. Each



Automation: Another Tool for Profitable Purchasing

If you don't already make use of data processing equipment in your purchasing operation, it might be wise to investigate the possibilities. Experts say it won't be long until automated purchasing setups will be the rule. Advantages: Better management of the purchasing function through faster action, greater accuracy, cost reductions. Here's what automation can provide:

Source: Based on user experience reports compiled by International Business Machines Corp. and Remington Rand Corp.

Inventory control.
Vender analysis.
Purchase order writing.
Purchased part requirements.
Purchased part requisitions.
Purchase specifications.
Spare part requirements.
Optimum order quantities.
Material purchase analysis.
Order followup.
Check on suppliers' invoices.
Writing of remittance checks.
Distribution of charges to proper account.
Dollar volume of purchases from each vender.
Usage of purchased goods.

member studies the item from the standpoint of his department. Costs and potentials are determined, overhead and writeoffs analyzed. Recommendations are submitted directly to top management.

Students of make or buy generally agree that where purchasing participates in the decision it serves to:

- Make internal manufacturing competitive with outside suppliers.
- Obtain substitute parts and processes for those that are more expensive or time consuming.
- Highlight internal inefficiencies by providing comparisons through material and purchase economies.

Manage Inventories

Inventories tie up nearly 30 per cent of the average company's working capital, says the National Industrial Conference Board, yet only a relatively few companies view inventories in a positive light and seek increased profits from inventory management rather than mere avoidance of loss. Trundle Consultants estimates that carrying inventory eats up about 17 per cent of the total cost of the material.

Here are several reasons why your purchasing department can cut costs and increase profits through inventory management: Good scheduling of purchases insures a satisfactory rate of turnover; familiarity with vender price lists helps in knowing when it is economically feasible to increase inventories to take advantage of quantity purchase discounts; records of purchase and issue determine when it is advisable to revise inventory and purchase levels in balance with changing demand, and they flash the danger signals of impending shortages or obsolescence; purchasing's knowledge of market conditions tells when it becomes necessary to subordinate theoretical inventory considerations to the assurance of supply; purchasing's knowledge of requirements enables it to detect obsolete or surplus stocks and to convert this idle investment into useful working capital.

Automate for Profit

The exhibit above lists some of the areas where automated equipment can aid the purchasing operation by increasing efficiency and lowering costs. You don't have to be a corporate giant to take advantage of automation. Most equipment makers have data processing centers in principal cities that will do work on a fee basis. Some private concerns also sell such services. Or perhaps you can do it yourself. International Business Machines Corp. recently announced a basic system of punched card equipment that rents for as little as $270 a month. Setups like Remington Rand's Robot-Kardex and Royal McBee Corp.'s Keysort Traveling Purchase Requisition can give immediate access to records on virtually any phase of the purchasing function.

For Purchasing, a Profit

Continuation of the cost-price spiral puts the squeeze on management to wring every penny of profit out of its operation. This means: More than ever before progressive purchasing departments will be called on to show that profits don't begin and end with sales but are equally wedded to cost reductions. The tools for profitable purchasing are available. It's up to purchasing to use them most effectively and up to management to provide the climate which encourages their use.

The Cost Crisis

Costs, rather than demand,
determine today's prices—and profits.
If you're a medium-sized manufacturer,
here's a way to improve your cost picture from within

Today, economists are confirming what many businessmen have long suspected. Prices, they say, no longer rise and fall with the demand for a product. Instead, they're solidly tied to a company's costs – the generally rising, almost inflexible costs of labor, raw materials, sales.

Who suffers from the change? Not the larger corporations. They're the ones who *set* the prices – set them on their own more workable cost structures. It's the small and medium-sized manufacturer who feels it most. For one thing, he hasn't the capacity, or the cash, to buy in volume. For another, his very size limits the latitude of his operations . . . allows but little room to absorb today's added costs and still protect his smaller profit margin.

Caught in this dilemna, many businessmen are searching for a way to improve their cost picture and to hold, or increase, their profits. What's needed, they agree, is a system of modern management control. But how do you get it without undue cost and complexity?

The answer is with new Keysort machines and methods.

Keysort gives you fast, accurate reports in such areas as sales and order analysis, labor distribution, work-in-process, inventory, job costing...helps you spot money-losing situations *fast*. Thus, with Keysort, you can better determine labor and material requirements, step up the rate of inventory turnover, tighten costs, concentrate on known high-profit products.

Best of all, Keysort is remarkably simple. Basic information on Keysort cards is mechanically created with the Keysort Data Punch for fast, easy classification. Complete and automatic processing is provided by the Keysort Tabulating Punch which punches, adds and totals quantities and amounts. Original records can now be processed automatically to produce desired management reports—*on time*. Without disrupting present procedures. Without specialized personnel. And at lowest dollar cost.

Contact your nearby Royal McBee Data Processing Representative, or write Royal McBee Corporation, Data Processing Division, Port Chester, New York for illustrated brochure CC-7.

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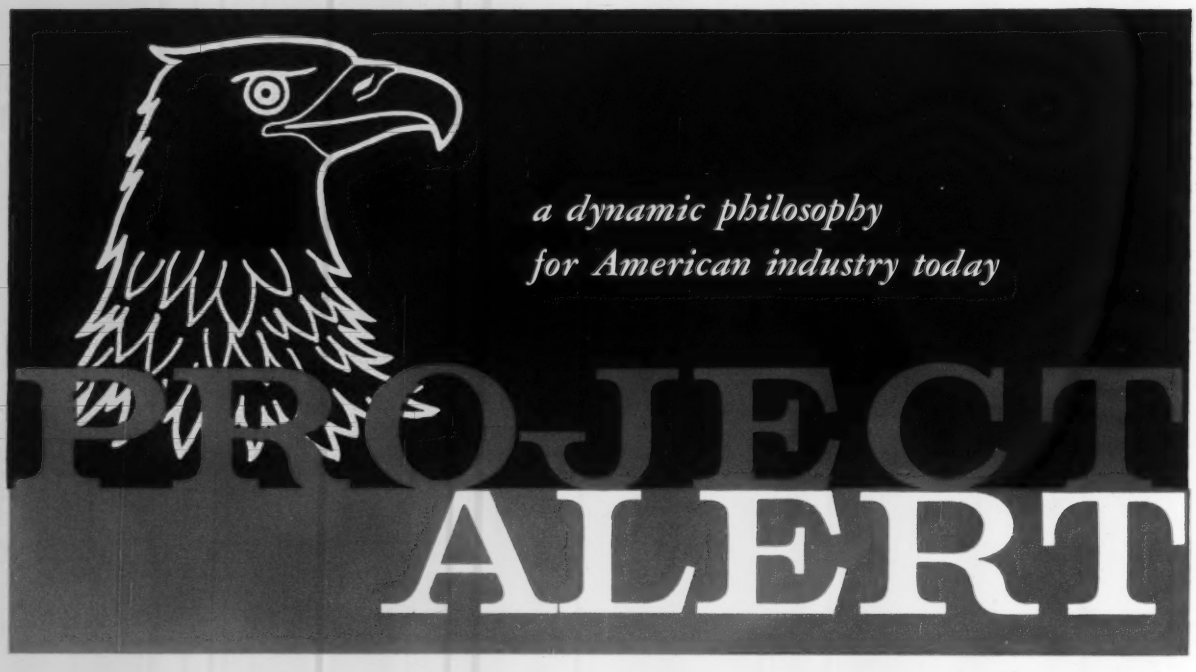
NEW CONCEPTS IN PRACTICAL OFFICE AUTOMATION



The purpose of this project is to establish a creative attitude of *dynamic alertness* on the part of all personnel in American industry.

Dynamic alertness is alertness on the move . . . is a positive, constructive way of thinking . . . a spirited new attack on your problems. It is swinging into action to get things done today . . . to insure a brighter, more prosperous future.

Three key words express the attitude of *dynamic alertness* . . .

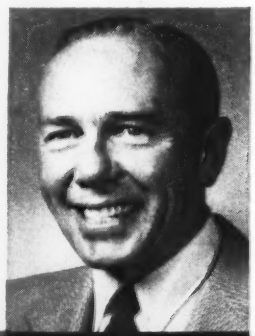
1. **Observation:** This means inspiring your people to look at your problems with curiosity and creative imagination. It is taking a walk through your plant and looking at things as though you are looking at them for the first time. It is cutting through the fog of complacency and seeing things with new eyes. It is looking for new ways to stop leaks and losses; searching for new ways to speed production and efficiency.

2. **Concentration:** This means the intense application of the mind power of everyone to specific problems. It is the starting of new creative fires in your organization. It is having key people ask themselves key questions: How can I do my job better? How can I speed the flow of work? How can I cut down on errors? It is applying individual and group thinking to a list of things to be done and sticking with them until they are finished. It is preparing today to solve the problems of tomorrow.

3. **Devotion:** This represents a new vital spirit of rededication to your company, to your customers, to your industry, to America. It is a return to the creative ingenuity that made this nation great . . . finding a way or making one. It is having the power and purpose to go forward, to believe in the future, to move ahead to better things.

We at Udylite believe in Project Alert. All of us, to a man, are pledged to a policy of dynamic alertness in every facet of our jobs . . . in our contacts with fellow workers . . . in the handling of equipment . . . on the production line . . . in our contacts with suppliers and customers.

C. H. Reeme, *president*
The Udylite Corporation



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Apply this dynamic philosophy to your firm. New, fresh creative imagination, newer, better production methods, newer more reliable equipment applied to the job *now* . . . will pay off in a brighter, more prosperous tomorrow. Write for a free copy of the Project Alert folder and a free Project Alert lapel button. There's no obligation, of course.

Technical Outlook

NEW HYDRAULIC STANDARDS—General Motors engineers and production people collaborated on a proposal to revise the Joint Industry Conference (JIC) standards for hydraulic equipment. Although it will not be acted upon before next spring, those interested may obtain copies from General Motors Corp., Process Development Staff, P. O. Box 128, Detroit 2, Mich.

STRETCHING DIE LIFE— Bassick Co., Bridgeport, Conn., got four times as many parts per die resharpening by an occasional application of a little molybdenum disulfide to the steel stock as it passed through. The firm says the lubricant permits deeper draws, smoother finishes, and closer tolerances than untreated dies.

TWO HOISTS IN ONE— Morgan Engineering Co., Alliance, Ohio, says it has a way to reduce the cost of crane equipment for a shop that needs both light and heavy hoists. The company has developed a dual capacity hoist capable of functioning as a double hoist on a single trolley. Designed by Donald Schaper of Morgan Engineering's sales department, the unit operates at slow speeds to lift heavy loads and at fast speeds to lift light ones. Conversion from one capacity to the other is achieved through a quick and simple connection or disconnection of two sections of the block (it governs controls). Cost reductions for the dual capacity hoist are achieved through use of basically the same mechanism as a single hoist. The dual capacity feature can be applied to many single hoist cranes now in use, the company says.

OXYGEN RESEARCH SPURRED— Producers of commercial compressed gases, keenly aware of industry's growing acceptance, are pushing oxygen research. Linde Co., a division of Union Carbide Corp., New York, told conventioneers at the recent Iron & Steel Show, Cleveland, that these developments are being readied for steelmen: 1. An improved end burner for open hearths will improve oxygen mixing and increase efficiency. 2. A pretreating tower will use oxygen to do a better job of desiliconizing iron prior to the open hearth. 3. A device will flame scarf round bars and tubes. (Officials say it is being tested in a German mill and in Linde's Newark, N. J., laboratory.)

HONEYCOMB CUTTING— Engineers at Solar Aircraft Co., San Diego, Calif., have perfected a method for electrolytically grinding honeycomb core sections. The core cells can be unsupported. Solar says the process is good for roughing as well as finishing; depths of cut to ½ in. are claimed for the process. The development consists primarily of Solar-adapted wheels, spindles, and power supplies.

RENT-A-LINE— Aluminum and steel fabricators who want an automatic line to test their ideas in electroplating, etching, cleaning, pickling, or similar processes can rent one from Hanson-Van Winkle-Munning Co., Matawan, N. J. The installation can duplicate conditions in almost any plant operation.

EXPLOSIVE FORMING— Convair, division of General Dynamics Corp., San Diego, Calif., is rushing to completion its first Dynapak, the driving mechanism behind its Hyge explosive forming technique. Convair engineers expect to demonstrate the machine on a forging job at the Metal Show in Cleveland, Oct. 27-31.

ZIRCONIUM PROGRESS REPORT — The Atomic Energy Commission estimates 1958 production of zirconium will exceed 2 million lb—nearly double last year's. The price for exceptionally large quantities will probably be 50 per cent less by yearend, it predicted. Ore sources seem unlimited. The report, prepared by experts at Battelle Memorial Institute, Columbus, Ohio, says major uses will still be nuclear reactors but suggests that designers may be overlooking a valuable structural material as costs decline still further.

USING KING-SIZE SWAGER— At Bay City, Mich., Dow Chemical Co. shrinks 9-in. steel pipes around Saran liners by passing them through an outsized swaging machine, said to be one of the largest ever made. Abbey-Etna Co., Perrysburg, Ohio, says its machine reduces the pipe diameter ½ in. at 15 fpm. Cost: $100,000.

One of the pusher-type continuous gas carburizing furnaces at the Axle Div. of Eaton Mfg. Co. Dew points of furnace zones are monitored by recorders in the heat treat office

Dew Point Monitoring Pays Off

It's bringing better quality carburizing at less cost to a manufacturer of truck axles. A switchboard sampling system permits anyone in heat treating department to check

By A. R. KEEFE
Plant Engineer and
M. R. KOEHN
Assistant Chief Metallurgist
Axle Div., Eaton Mfg. Co.
Cleveland

ROUND-THE-CLOCK monitoring of five endothermic gas generators and six heat treating furnaces is paying off in better quality carburizing at the Axle Div. of Eaton Mfg. Co., Cleveland.

Case depth, carbon level, and hardness are held to close limits with minimum supervision.

The Axle Div. of Eaton is a leading supplier of truck axles. Its diversified line includes two-speed units, single and double-reduction types, tandem drive axles, and dead front axles.

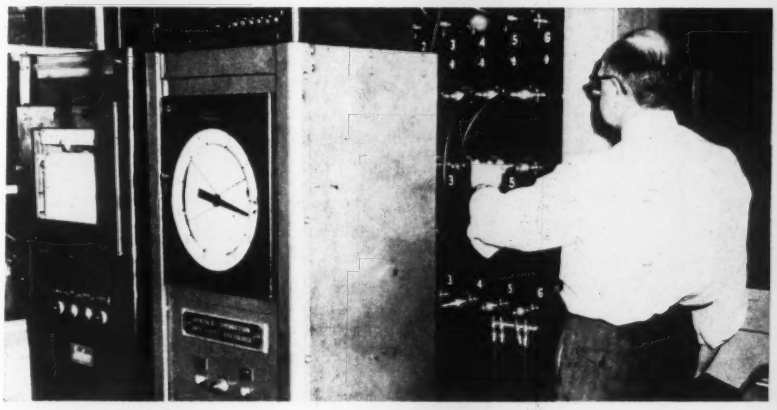
The company makes all of the gears for its products. To develop the surface wearing qualities and tough core properties needed in truck service, alloy carburizing steels are used. Controlled carburizing and hardening operations become prime considerations in the manufacture of the axles.

Use Six Furnaces — Carburizing is done in six large pusher-type radiant tube, gas fired furnaces. Four of the furnaces are designed for automatically quenching the parts. The other two units require manual quenching, or are used for carburizing only with subsequent reheating and manual quenching from three controlled atmosphere furnaces. Press quenching is necessary on all ring gears to maintain size and shape.

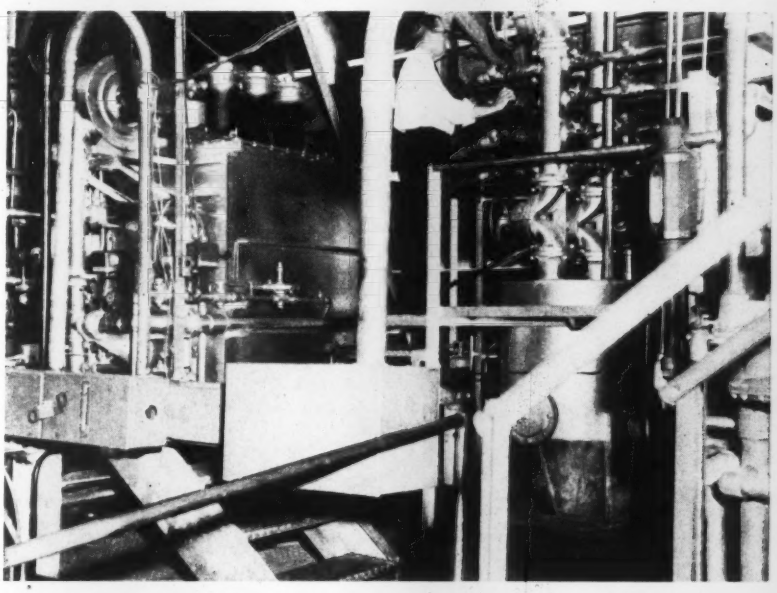
Built by Surface Combustion Corp., Toledo, Ohio, the furnaces can process up to 1600 lb an hour. Gas atmospheres for carburizing and hardening are supplied by five Surface RX endothermic gas generators which can produce over 15,000 cfh.

All five generators are in daily use, and a sixth unit is kept on standby. The generators are on a balcony above the furnaces; this arrangement saves valuable floor space and permits better housekeeping.

Monitoring System—Eaton plant engineers and metallurgists devised the following sequence of using, sampling, and checking the RX



Quick-snap hose connectors make it easy to connect any sampling line with any open position in the recorder. The two recorders can check the dew point at 37 points in the heat treat department



RX generator gas from five generators feeds to a common manifold (right) where it mixes. An accumulator chamber (lower right) helps the mixing and collects the dust and soot

generator gas, the carburizing gas, and the heat treated product:

1. The atmosphere from the RX gas generators is piped into a common manifold which leads into a gas accumulator where the gases mix to form a common dew point.

2. Atmosphere samples are taken at each generator, at the gas accumulator where any soot will be removed, and at the furnaces. Each furnace's zone can be sampled individually. Copper sampling lines ¼ in. in diameter extend from each check point to the heat treating office where the recorded dew points are under constant scrutiny.

3. Two multipoint Surface Autocarb dew point recorders are in the heat treat office next to a switchboard-type distribution panel. The panel is the receiving point for the sampling lines and also serves as the distribution point to the dew point recorders.

Gases Are Mixed—Normally, the five generators are on test 24 hours a day. Should one of them wander out of range, it will be spotted immediately and adjusted. All gas-air ratios are controlled manually at the generators.

In using a system of mixing the product of the five generators, the total mixture will vary only slightly should any of the units be off-range. With constant monitoring of the gas, there is no serious change in the atmosphere at the furnaces, keeping the dew point factor in carburizing almost constant.

To furnish necessary carbon potential for carburizing, natural gas is introduced with the generator gas in the carburizing zone of the furnace. The other zones receive only straight generator gas, which has a dew point of about plus 20° F. Furnace atmosphere is checked only once each workshift after the furnace is regulated.

The front of the distribution panel has quick-snap connectors which connect the sample lines to the recorders. Checking the dew point from any of the sampling lines is simple. Any person in the heat treating department can make a dew point check.

Metallurgical Checks—The metallurgical department makes several checks each day. This department also keeps quality control charts showing carbon level, case depth, microstructure, and hardness. Standard ½-in. diameter test samples are run through the furnaces with the regular work every 2 hours. These are direct quenched in oil.

One from each furnace per day is checked by the metallurgical laboratory. The tests indicate when adjustments of the carburizing atmospheres are necessary. The other test pieces are fractured and etched by the furnace operators.

Once each week, a production workpiece from one of the furnaces is given a complete metallurgical examination. Accompanying the workpiece is a carbon gradient test bar and shim stock specimen used to evaluate the carbon potential of the atmosphere. At this time, the furnace atmosphere is checked for gas composition and dew point.

Depth Ranges — Two standard case depth ranges are specified for the gears used in the axles. One range is 0.040 to 0.055 in.; the other is 0.050 to 0.065 in. The depth is always held to the high side of the ranges.

The carburizing setup at the Axle Div. is paying dividends in many ways. More precise carburizing has been obtained. Case depth is uniform. Clogging in the gas atmosphere lines is greatly reduced. Result is better carburizing at less cost.

THE JOB: Stamp Amplifier Chassis

OLD METHOD: 56-ton Punch Press

Processing	$12,150
Tooling	16,000
*Total Annual Costs	$28,150

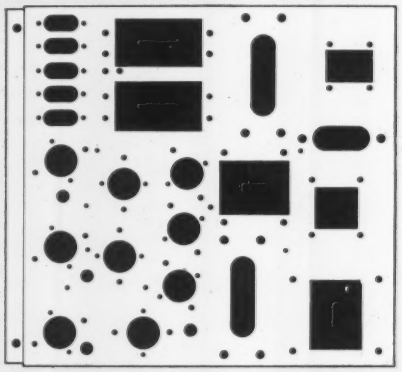
NEW METHOD: Turret Punch Press

Processing	$ 1,140
Tooling	760
*Total Annual Costs	$ 1,900

*Based on present rates of 450 units a year on separate job orders

Equipment cost including installation and tooling	$21,955
Gross annual saving	26,250
Capital recovery	1,718
Net Annual Savings	$24,532

EXAMPLE: To make this chassis . . .



It used to cost $62.50, took 30 separate setups. It now costs $4.25, takes two setups.

How We Beat the Cost Crisis

Our Press Paid for Itself in One Year

On one job it trimmed manufacturing costs 93 per cent. This article, one of the top entries in the Cost Crisis Awards Competition, illustrates how cost-conscious managers can boost efficiency. Another top entry will appear next week

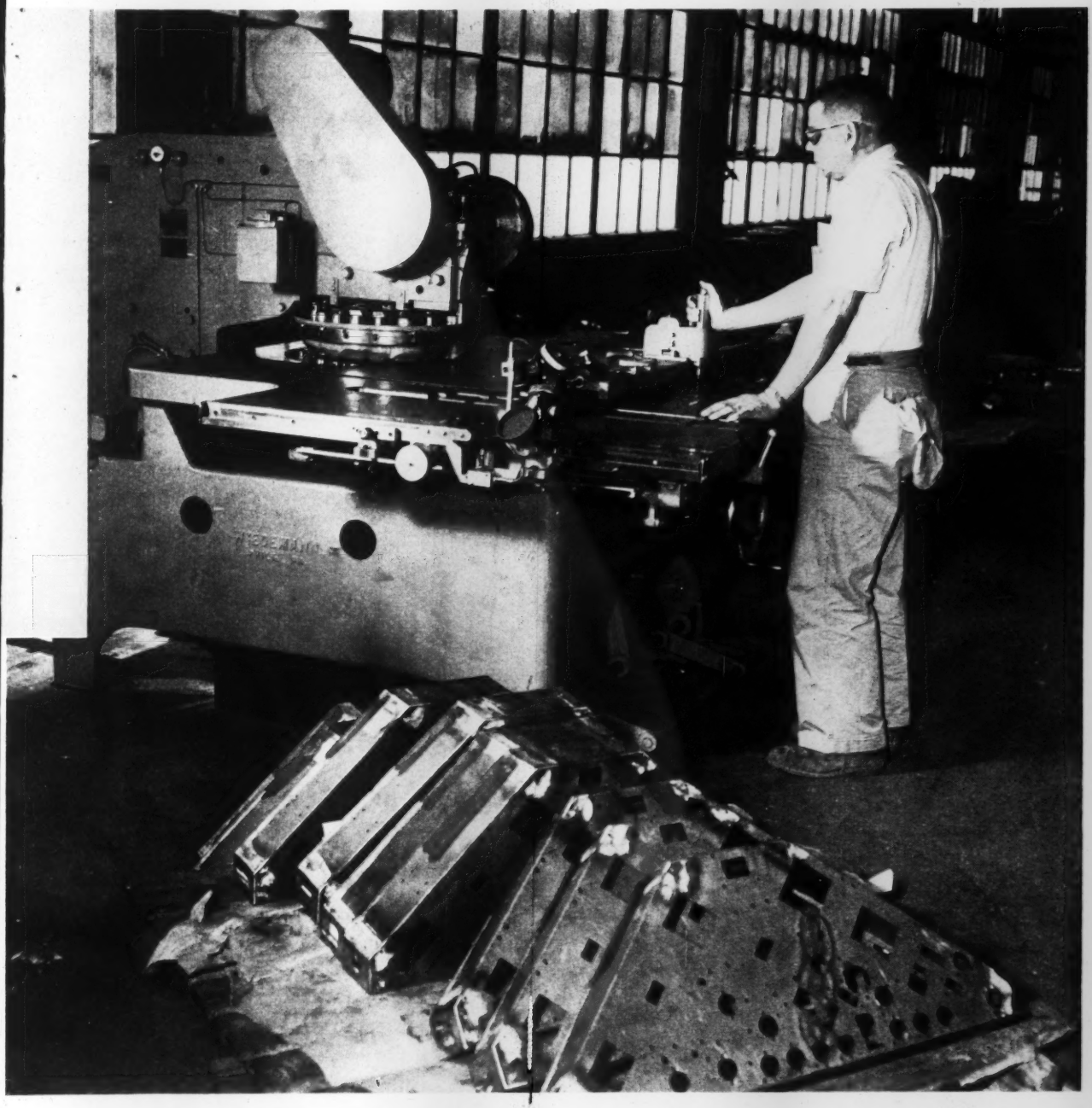
IN 1956, production men at the U. S. Naval Ordnance Plant, York, Pa., planned to make a variety of amplifier chassis for a spare parts order. Industrial engineers, dissatisfied with current methods, estimated a new turret punch press would save $11,000 on that order alone.

On the strength of that estimate, a Wiedemann RA-41P turret press was purchased, completely tooled with the variety of punches and dies needed for chassis production. The machine paid for itself in a year.

The Problem—The number of identical amplifier chassis in an order for the Ordnance plant varies, and may run as high as 145. Manufacture of the parts led to high tooling costs, excessive setup time, and long production cycles.

For example, the chassis illustrated in the drawing used to take 132 hours to set up on the 56-ton punch press, and it took 154 hours to run off 65 parts. The tooling for the job cost about $4000.

Old Way—George R. Lewis, in-

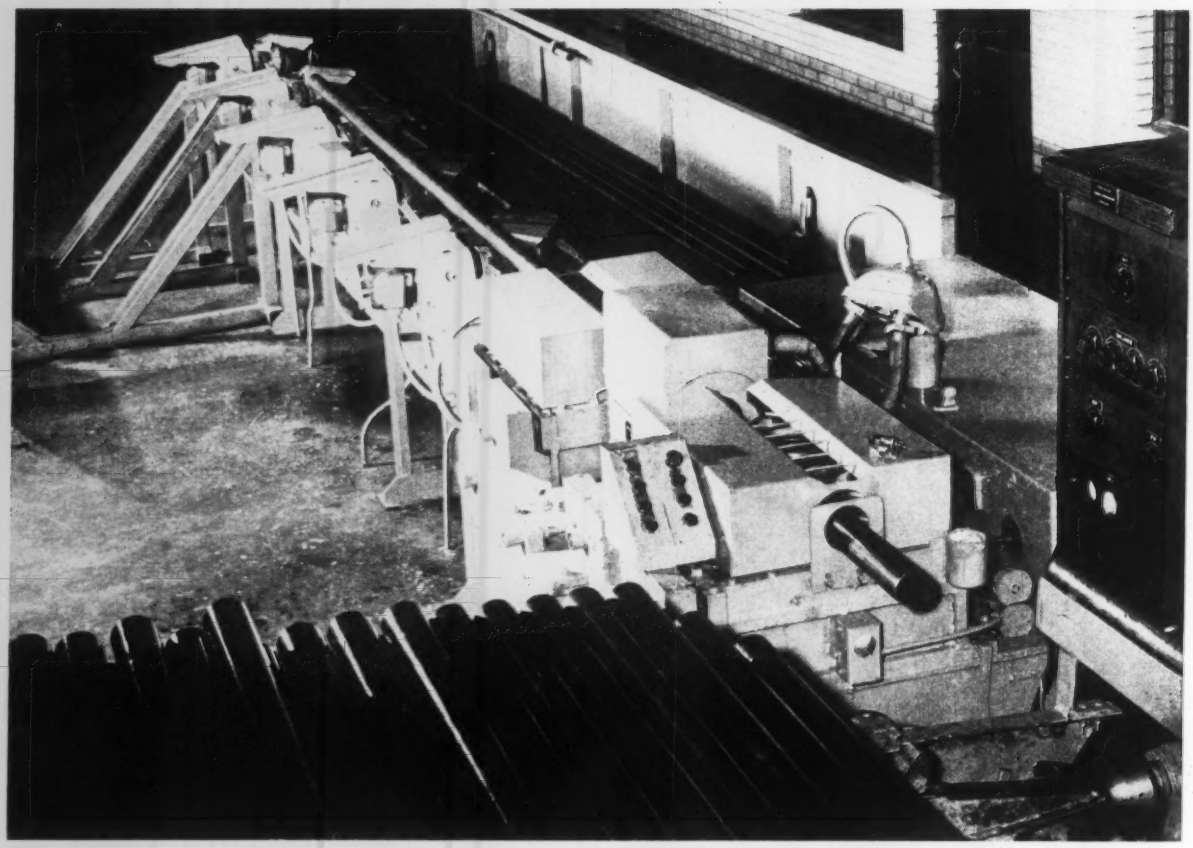


dustrial engineer, says those were the drawbacks that made it inefficient to continue using the 56-ton press. The operator was putting the punch and die in the press, then processing the appropriate hole, or group of holes. Next, he stopped, took out the tooling, and set up with the next set of tools for another hole specification.

In making the part cited, the operator had to make 30 different setups.

New Way—On the turret punch press, the job is done in two setups. The operator positions the part on the movable table. He then indexes the turret to bring the proper set of tools in place. He maneuvers a pantograph stylus over a template to position the part under the punch. When he depresses the stylus, it triggers the press, firing the punch.

The turret has positions for 18 sets of punches and dies. Elongated holes, large squares, notches, and many other special shapes can be punched by a series of blows with standard round and square punches. Few special tools are required. (The old method required 28 special tools for the job described.)



The Farrowtest machine works on the eddy current principle to locate internal defects in tubing. It is calibrated to reject flaws above a specified minimum

Tube Testing Gains Precision

Republic Steel Corp.'s Farrowtest (trademark) will detect flaws which are normally passed by other methods. It enabled Steel & Tubes Div. to redefine its dimensions on rejectable defects

ALL nondestructive tests for steel tubing permit the "passing" of some defects, but the margin of error is appreciably narrowed by Republic Steel Corp.'s Farrowtest, an eddy current method. Use of the test has enabled Republic's Steel & Tubes Div. to redefine its dimensions on rejectable defects in welded steel tubing (carbon and stainless).

On commercial tubing produced to specification, the test will reject flaws which ordinarily would be passed over by other methods. The Farrowtester is adjusted to detect and reject any irregularity, however minute, which completely penetrates the tube wall, or equals or exceeds the dimensions shown in the exhibit on Page 105.

Significance: Commercially produced tubing of consistently higher quality is available to fabricators of pressure vessels, heat transfer equipment, and hydraulic equipment—a particularly important factor in view of the demands of modern science. There is no extra charge for this test over the commonly used hydrostatic test.

Maximum selectivity of the Far-

Farrowtest Reject Table

Farrowtest detects and rejects not only tubing containing defects which completely penetrate the wall but also tubing with defects equal to, or greater than, those shown in this table. Where required, the sensitivity of Farrowtest equipment can be calibrated for defects of lesser specified area than shown in table, at extra cost.

Wall thickness (B.W. gage)	Minor dimension of defect (Length or depth)	Length x depth area in square inches
20	0.006 in.	0.0025
18	0.006 in.	0.003
16	12.5% of wall	0.003
14 & 13	12.5% of wall	0.004
12 & heavier	12.5% of wall	0.005

The test shall be made on the welded seam and adjacent metal affected thereby. You will note no mention is made of "width of defect." An advantage of Farrowtest is that when an actual discontinuity is present, whether the width is 0.0005 or 0.050 in., the circuits will react and produce a signal.

rowtester is imposed on the weld area and the adjacent area affected in the welding operation; however, even at a point 180 degrees from the weld the sensitivity is sufficient to detect defects normally revealed by a pressure test.

Definition—The test depends upon eddy currents induced in the tube. A disturbance in the flow of the currents, caused by a discontinuity or irregularity greater than the calibration setting, produces a signal to actuate a mechanism which rejects the tube.

Probably one of its most outstanding advantages is that it is reproducible, calibrated with standardized setup tubes. A tube or a lot of tubing, tested at different times and on different Farrowtesters, gives identical signals. Rejection is mechanical and independent of observation, judgment, or opinion of the operator.

Another unique feature: The testing machines are incorporated into the production line. Where nondestructive testing is done on a quality control basis, generally a signal simply indicates the fact that there is a need for further examination of the tube.

History — The Farrowtest was originally described (1941) in specifications this way: "In lieu of the hydrostatic test, when mutually agreed upon by the purchaser and the manufacturer, each tube shall be tested at the mill by passing through a nondestructive tester which is capable of detecting defects 1/16 in. in length and one-half the wall thickness, or defects of any length completely penetrating the wall. Such tests shall be made on the welded seam and the adjacent metal affected thereby."

That description is still included in many specifications.

But because the present method is even more precise, the company was able to redefine such defects.

The present Farrowtest is an outgrowth of the original machine put into production in 1939 by the late Cecil Farrow, Republic engineer, after ten years of intensive research and development. It was the first successful eddy current device for tube testing. Today, the company's equipment has behind it 18 years of actual production line testing, plus a continuing research program.

In 18 years of production line testing to specifications, the machines have handled more than 300 million ft of welded steel tubing for aircraft, pressure, and other critical applications. Example of results: Over 10 million ft of Farrowtested welded steel tubing was supplied to the Navy for use in boilers. Not one single report of a failure or a defect has been received.

Republic's long experience covers production testing of a range of carbon, stainless, and alloy steels. This experience, plus continual basic research and development, resulted in the present sensitivity of the Farrowtest machine.

Greater sensitivity is available at additional cost for certain critical applications such as atomic energy and nuclear developments.

High Standards—How does Republic's method differ from other types of eddy current testing?

The answer: Refined screening circuits enable the machine to differentiate defects from nonharmful variables.

No organized group has been able to come up with a generally accepted standard on the size at which a defect becomes harmful for a given end use. Republic's tight standards are based on the result of testing of over 300 million ft of pressure tubing. What this means to the customer: When a commercial defect limitation is not suitable for an extremely hazardous end use, he can be certain of obtaining tubing that has been 100 per cent tested to his specifications.

Documentation — Nondestructive tests for tubing have gained wide acceptance. One reason, says Republic: The hydrostatic test "passes" defects large enough to be objectionable in many applications.

Republic engineers tested pressure tubing with the company's method and by hydrostatic means. Their object: To determine how large a defect could pass a standard hydrostatic test. Here are some of their conclusions:

1. Defects 90 per cent through the wall and as long as 1.5 in. (and perhaps longer) may not be detected by the standard hydrotest.

2. Defects 50 per cent through the

wall and as long as 7.7 in. (and perhaps longer) may not be detected by the standard hydrotest.

3. Large defects may not be detected by the standard hydrotest even with pressures as high as 8000 psi. Using 18 gage tubes with an OD of 1.75 in., typical examples are: 2.7 in. long, 46 per cent through the wall; 1.4 in. long, 94 per cent through the wall; 1.3 in. long, 43 per cent through the wall.

4. Tubes may fail in service at low pressure after having passed an 8000 psi hydrotest of short duration. This indicates: A high pressure hydrotest sometimes increases the chance of failure instead of guaranteeing against it.

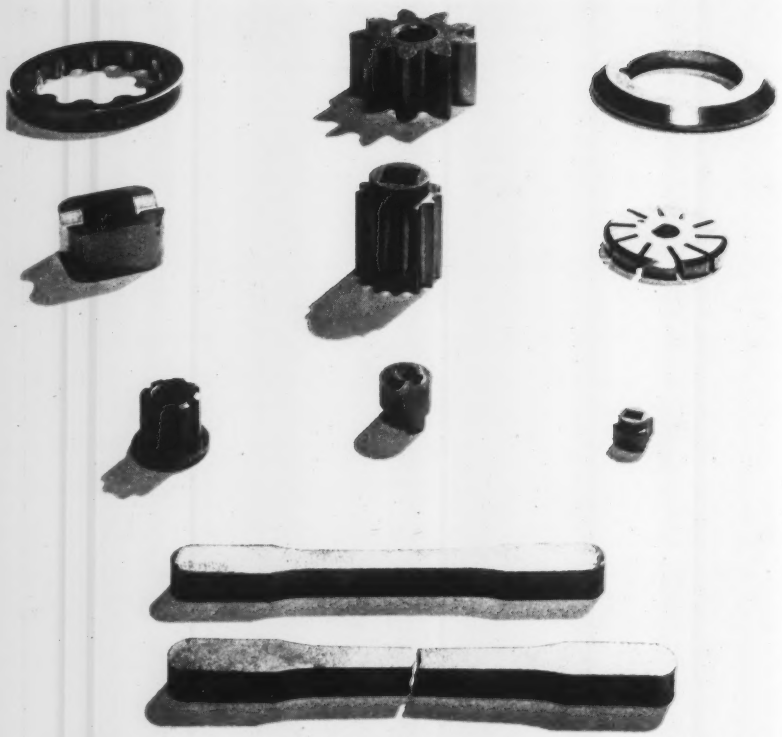
Definitions: Tubing, Pipe

Terms used in describing tubular products have grown with the industry and, in some cases, are hard to define. The American Iron & Steel Institute product manual on tubular products says there is "no easy rule for distinguishing between the usages of the general terms pipe, tubes, and tubing. The distinctions are associated with the end use of these products . . . .

"Pipe, as distinguished from tubes, is commonly produced in greater quantities and in relatively few standard sizes . . . . Pipe sizes and wall thicknesses were originally standardized to permit threading the ends for joining lengths with couplings or other connectors."

A commonly accepted definition of tubing: "A tubular product generally manufactured to specified dimensions, tolerances, chemistry, mechanical properties, and other specifications (including surface) required for definite applications in aircraft, sanitary, mechanical, pressure, ornamental, or structural uses. It is generally specified to two dimensions—OD (outside diameter) and wall, ID (inside diameter) and wall, or OD and ID. It is not primarily designed for use with standard threaded pipe couplings or for applications where standard or heavy wall pipe is normally used."

An earlier article (STEEL, Sept. 1, p. 62) implied that the Farrow-test method, described in the preceding article, is currently being used to test carbon steel pipe. It is not, but is restricted to testing tubing.



Representative group of parts sintered from Republic's Type 6460 iron powder. Tensile bars at bottom (before and after stretching) show ductility of material

Powder Has High Strength

POWDER metallurgy parts compacted from a new, high strength, low alloy iron powder can be made as strong as those produced with comparable wrought or cast metals.

Developed by Republic Steel Corp., Cleveland, the powder contains small quantities of nickel and molybdenum. It's designated Type 6460.

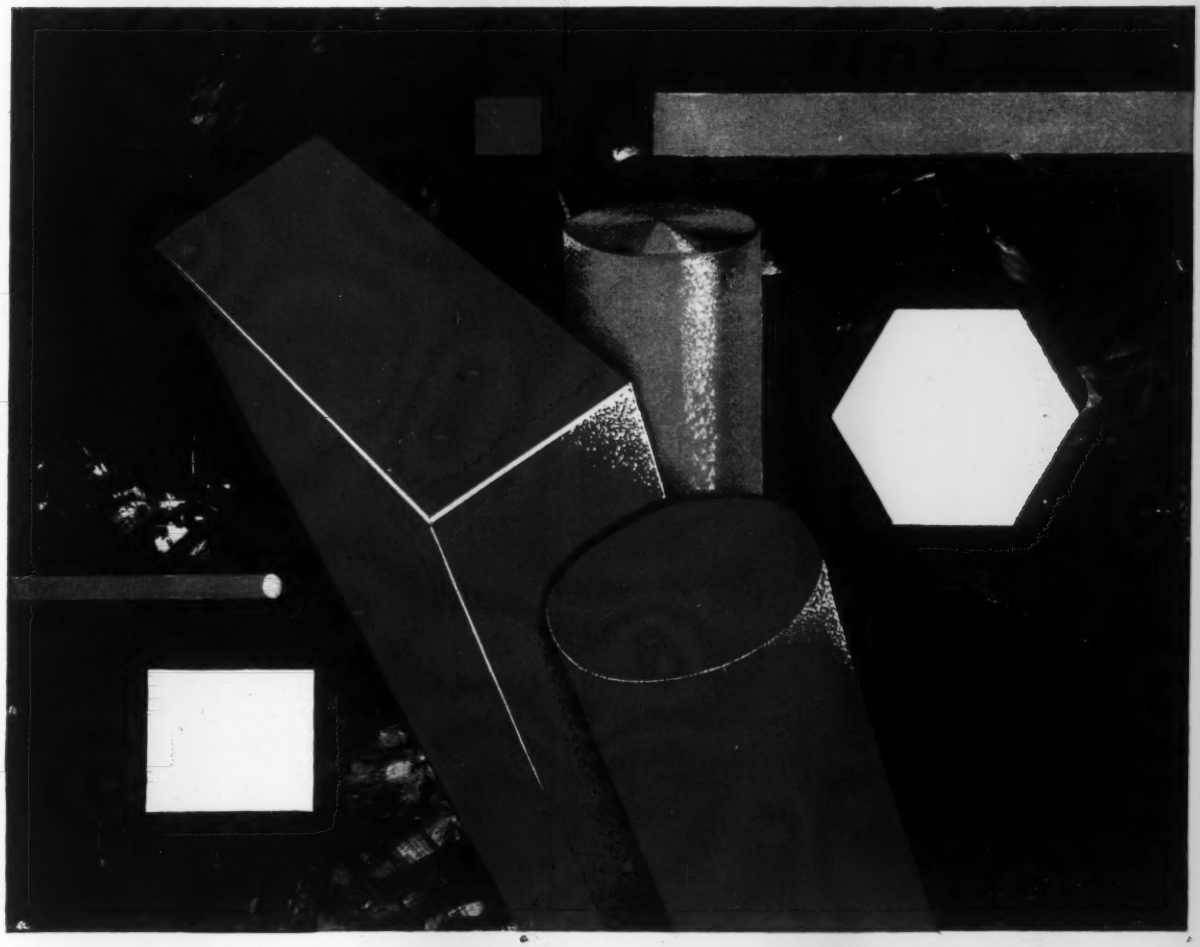
Strength Level—The powder may be fabricated to develop minimum tensile strengths of 60,000 psi as-sintered and 100,000 psi when heat treated. Performance of the parts compares with those made of carbon steel which are normally used in machine parts subjected to high stresses, says Republic.

Briquetting pressures are normal (30 to 35 tons to obtain a density of 6.4 grams per cu cm), as are sintering cycles (2030 to 2050° F, 45 minutes in endothermic atmosphere) and heat treating procedures.

The dimensional characteristics after sintering fall within the accepted tolerances of the powder metallurgy industry (maximum 0.004 in. shrinkage from die size at 6.4 density).

Extra Service—Republic has developed a simplified method of supplying metal powder processors with the data they need. It's in the form of three graphs which show tensile strength, dimensional change, green density, vs. sintered density, and the briquetting pressures needed to form the part.

The company is producing the powder at its Toledo, Ohio, plant.



Use quality USS Carilloy Steels

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The wide distribution of USS Carilloy Steels is your guarantee of instant availability. So, you can be certain of prompt, efficient delivery when you order USS Alloy Steels from a steel service center.

Plan now to combine the production-boosting benefits of a steel service center with a full line of quality-controlled products from United States Steel. For instance, you can get these USS Carilloy Steel products at your nearby steel service center: blooms, billets, slabs, bars, bar shapes, spring flats, plates, sheets, strip, special sections, structural shapes . . . any form, specification, condition or quality you need.

Remember, as a part of the American Steel Warehouse Association, your steel service center has been set up specifically to handle your immediate steel demands. So the next time you order alloy steel from your steel service center, be sure to specify *USS Carilloy Steels.*

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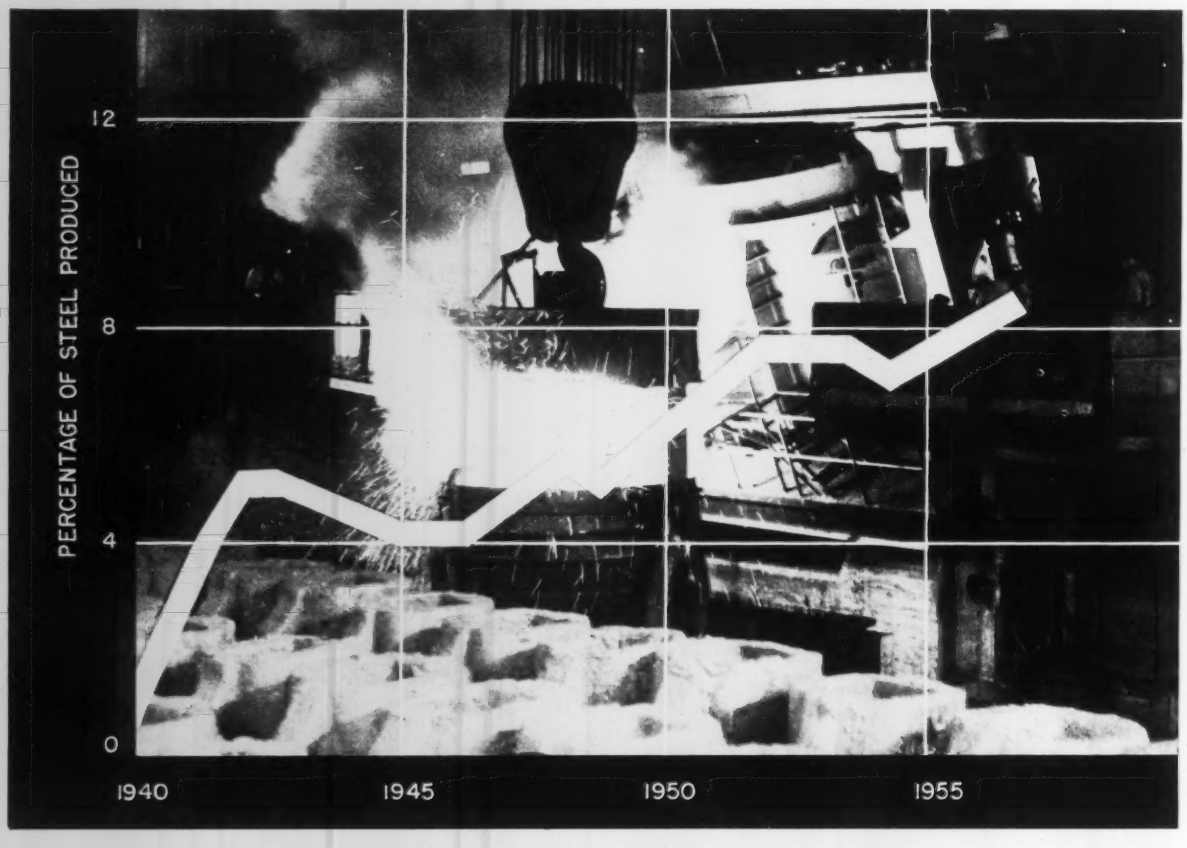


Steel produced in electric furnaces in the U. S. comprises a growing share of total output

More Electrics for Carbon Steel

There's a bright future for them in cold metal shops, but it will take major changes to make them competitive with open hearths where hot metal is available

SINCE 1953, at least six large electric furnace shops in the U. S. have devoted the major share of their production to plain carbon steel ingots, in direct competition with open hearths.

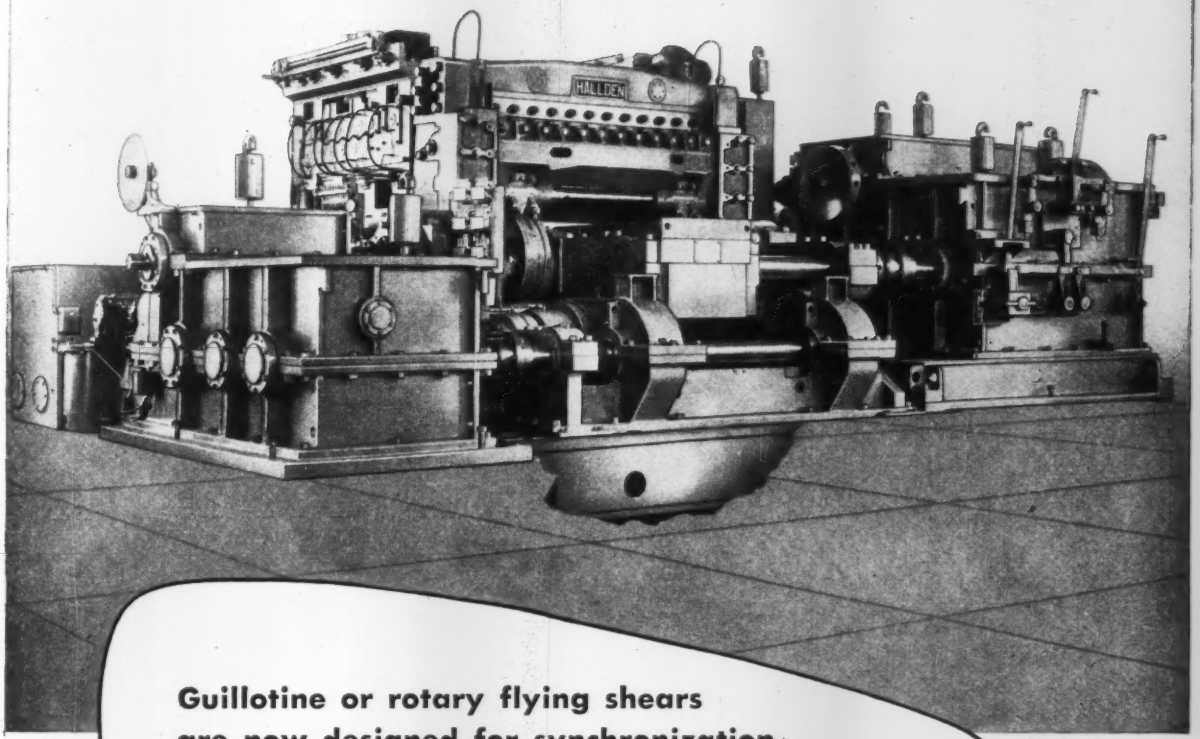
How this trend arose, and where it is taking us, was analyzed recently by two representatives of United States Steel Corp.: A. C. Ogan, superintendent of electric furnaces, and D. J. Carney, division superintendent of steel production, Duquesne Works. They spoke at the special meeting of the British Iron & Steel Institute, Liege, Belgium, in connection with the Brussels World Exposition.

This is the picture they drew:

War the Incentive—Until recently, demand for alloy, tool, and stainless steels was the major reason for expansion of electric furnaces in the U. S. During the last war, the demand for armament steels of electric furnace grade led to the construction of a number of large electrics.

At the same time, nonintegrated steel companies installed electrics to assure themselves a supply of carbon steel ingots. Their favorable experience led larger integrated

SYNCHRONIZED *"On the Fly"*



Guillotine or rotary flying shears are now designed for synchronization adjustment without stopping the machine.

Automatic Shears

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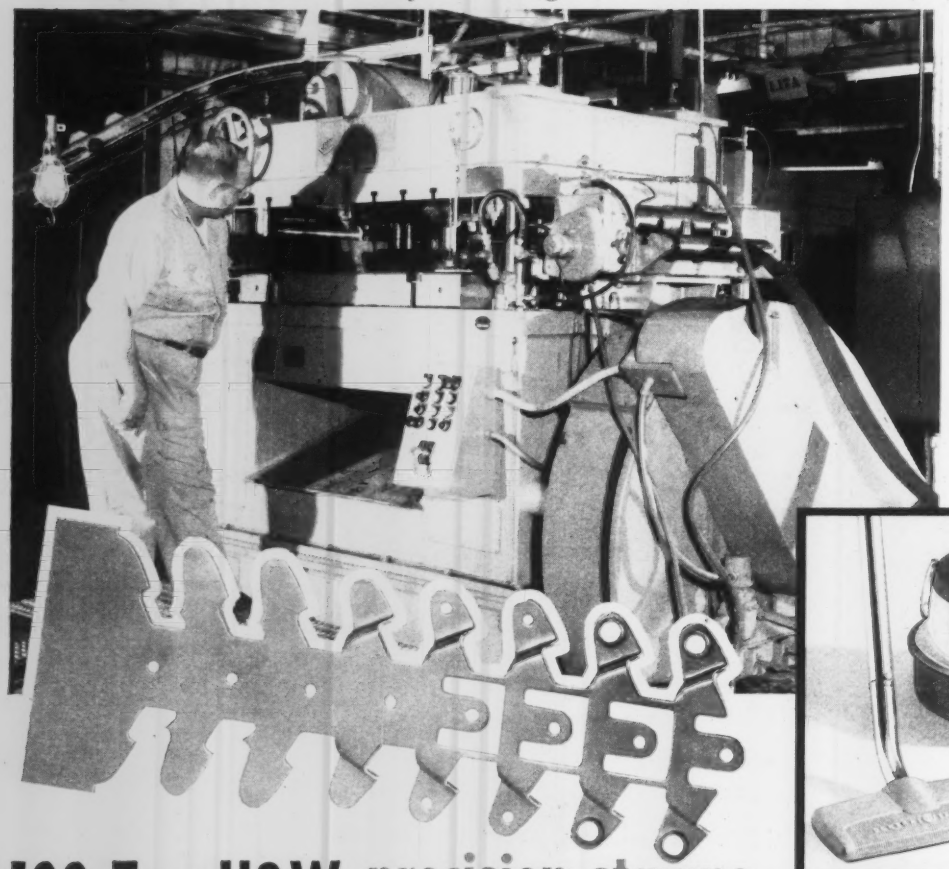
Another H-P-M Henry & Wright . . . in service at General Electric



Another 100-ton Henry & Wright double crank dieing machine stamps floor tool brackets for model C-6 General Electric vacuum cleaner at Housewares and Radio Receiver Division, Cleveland, Ohio.

100-Ton H&W precision-stamps GENERAL ELECTRIC Vacuum Cleaner Part on 7 stage die

The precision, speed and flexibility with which the double crank H & W handles both the simple and complex progressive stamping jobs make it an integral part of the automation processes in many large companies such as General Electric. Its versatility greatly extends the range of work that can be handled.

The advantages of the double crank system include high speed operation with perfect alignment, even with severe off-center loads, and longer die life made possible by a pulling rather than a pushing stroke on the die. You can form larger parts on the lower capacity machines, or produce stampings requiring high pressures with precision. The machine has a low center of gravity, giving it greater rigidity and strength. Sizes from 25 to 500-tons meet your every need.

Assure yourself of top quality work and proven production economies with H & W dieing machines. Call or write your H-P-M representative today for complete information. You'll be glad you did!

H837

THE HYDRAULIC PRESS MFG. COMPANY

A DIVISION OF KOEHRING COMPANY • MOUNT GILEAD, OHIO, U. S. A.

steel producers to make carbon steel in electric furnaces when the demand for alloy and stainless grades fell off.

Average Size Grows—Along with the increase in number of furnaces has come a general increase in size. While 100 tons represents the largest door charge electric furnace to date (a unique, six-electrode installation made in 1927), top charge furnaces are up to 200-ton capacity now, and American Bridge Div. of U. S. Steel has a 250 ton, elliptical, six electrode furnace on the drawing boards.

Welded construction, improved tilting mechanisms, more rigid roof rings, and stronger electrode masts have all helped make larger furnaces practical. The maximum effective size of top-charge furnaces does not seem to have been reached. Even door charge furnaces may grow larger if hot metal practices develop which give their large hearths and shallow baths a cost advantage.

Power Moves Ahead—Furnaces are no longer limited by transformer or electrode capacity, but the inefficiency of melting scrap in large furnaces with one centralized heat source suggests going to the six-electrode furnace to better distribute melting energy. One such proposed furnace will be powered by two 30,000-kva transformers.

The high cost of power and electrodes has spurred developments in voltage and current regulation which have increased electrode speeds from 40 in. per minute to 120 in. per minute. Even better controls are coming which will further increase production rates and reduce operating costs.

An important advance in auxiliary equipment is the automatic electrode holder. It has increased safety, decreased electrode changing and positioning time, reduced maintenance on electrode holders, and reduced electrode and power consumption through providing better electrical contact.

Induction stirring hasn't been used for carbon steel. It may prove advantageous when hot metal is added to the charge by evening the temperature of the deep bath and bringing more metal into contact with the slag.

Refractories Set Pace — Electric furnace operators seek improvements in refractories. At present, refractories limit transformer capacity to about 35,000 kva. They are damaged by the concentrated high voltage arc (one reason for going to a six-electrode furnace, which would spread the arc).

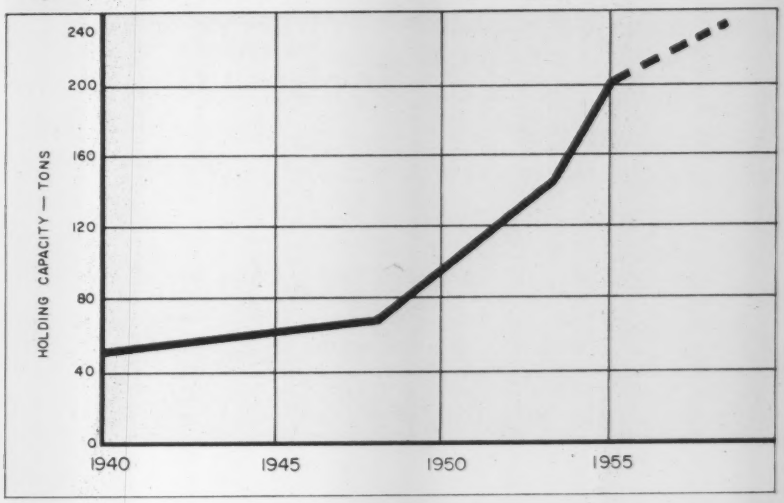
Basic refractories are used universally in American ingot producing furnaces, except for the roofs, and some are using them there. High magnesia (90 per cent MgO) bricks have aided subhearth life. Side wall erosion is being lessened with better metal-clad bricks, and fused, chrome-magnesite bricks have proved an effective, if expensive, way to minimize hot-spot damage from high-power and long arcs.

Speed the Key—The problem is to stay competitive with the open hearth in spite of power and cost disadvantages. This puts emphasis on elimination of delays. Of utmost importance are minimum time between tap and charge and minimum time for charging, electrode changes, power delays, roof changes, and relines if maximum tons per hour are to be achieved and costs held down.

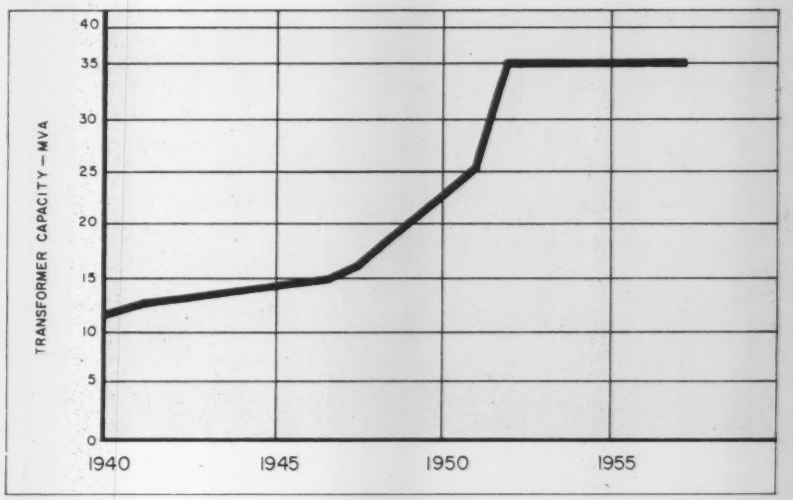
Some avenues of cost cutting be-

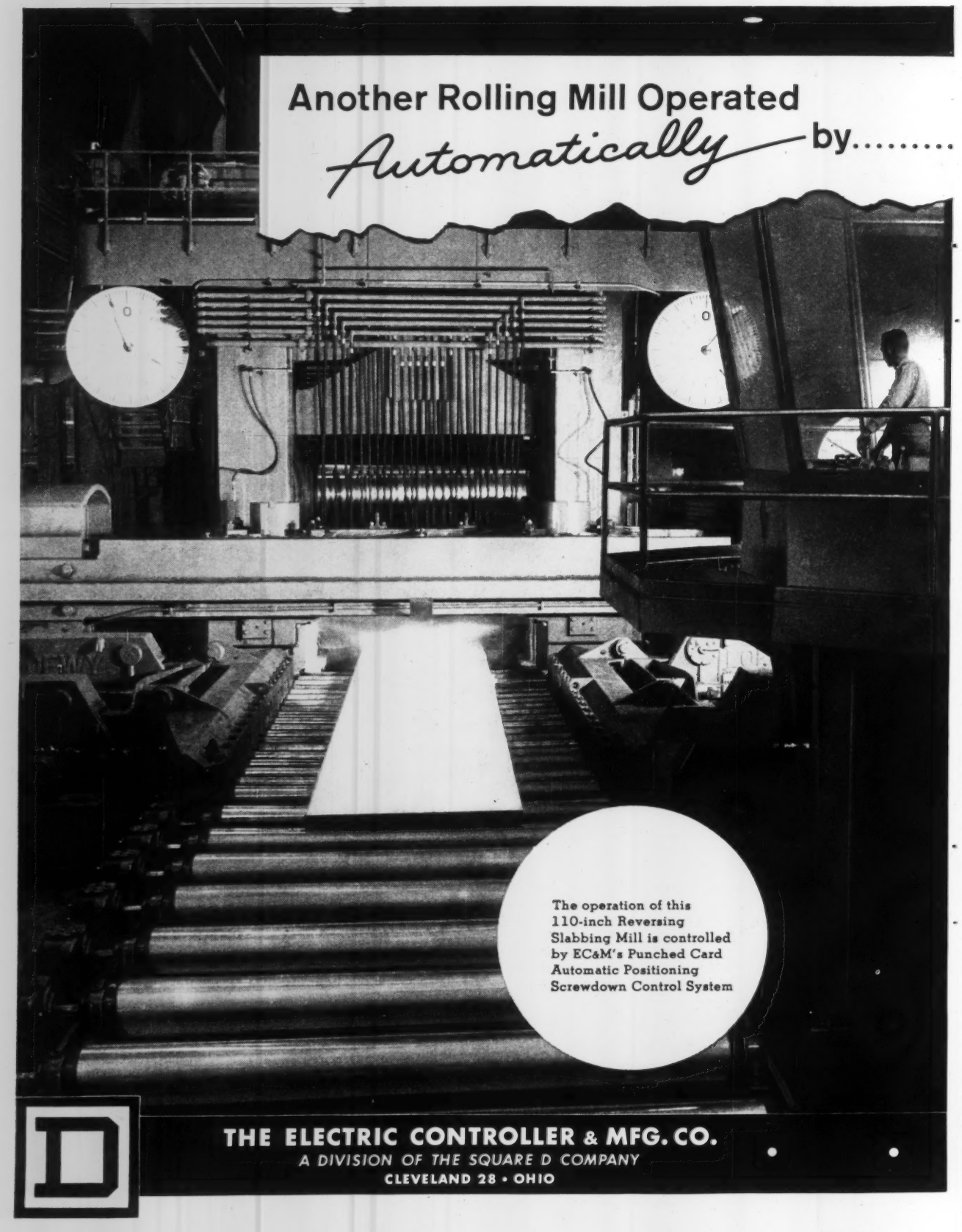
(*Please turn to Page* 114)

Top Charged Electrics Are Getting Bigger



Transformer Capacity of Electrics Levels Out




Another Rolling Mill Operated
Automatically by.....
The operation of this 110-inch Reversing Slabbing Mill is controlled by EC&M's Punched Card Automatic Positioning Screwdown Control System
THE ELECTRIC CONTROLLER & MFG. CO.
A DIVISION OF THE SQUARE D COMPANY
CLEVELAND 28 • OHIO

EC&M PUNCHED CARD CONTROL

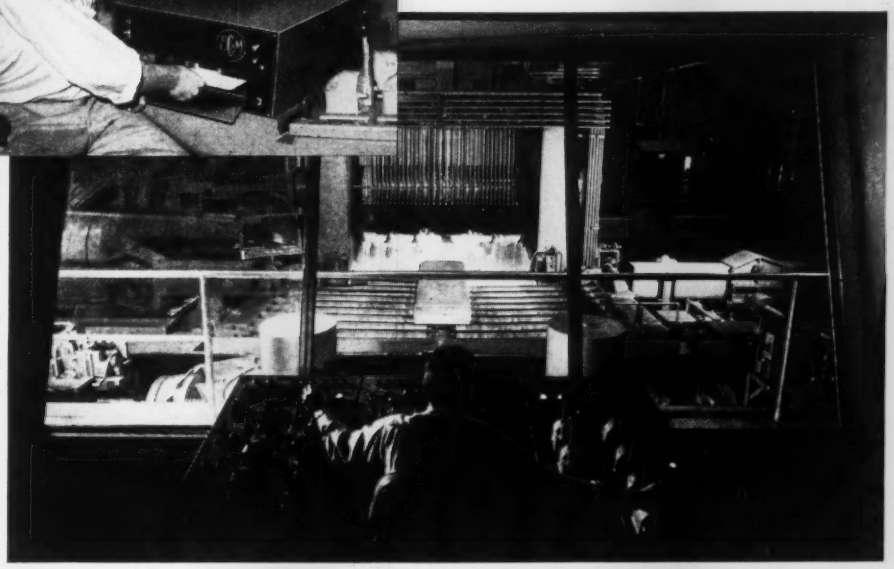
Since 1937, EC&M has been the pioneer in the development of Automatic Positioning Screwdown Control Systems. With EC&M's Punched Card System of scheduling, new operators can be quickly trained to produce greater tonnage to accurate tolerances—automatically. Since rolling is automatically maintained to specifications issued by the Metallurgical Department, the highest quality of the finished product is assured.

With EC&M's Punched Card System of automatic rolling, the operator can easily change from automatic to manual control and back again. To change schedules, a new card is inserted in the card reader. Cards can be stored and re-used when an identical rolling schedule is needed.

The EC&M Automatic Positioning Screwdown Control System can be furnished with Direct Reading Card System, IBM Card System or Slider Type Schedule Panel.

Write for Bulletin 6550 for complete information

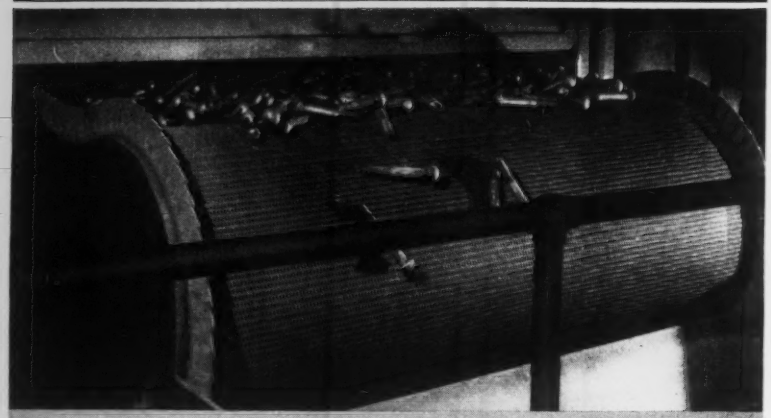
A single card containing the schedule for all passes is easily inserted in the Card Reader. With the card in place, the operator, by pressing a single pushbutton once for each pass, positions the rolls accurately. There is no schedule to memorize.

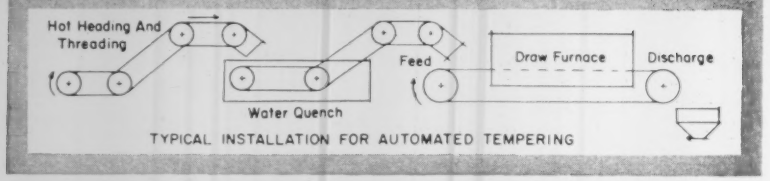


This 168-inch Reversing Roughing Mill is also equipped with EC&M's Punched Card Automatic Positioning Screwdown Control System

1794

Cambridge WOVEN WIRE BELTS





TYPICAL INSTALLATION FOR AUTOMATED TEMPERING

METAL-MESH BELTS RESIST WARPING OR BUCKLING—CUT COSTS IN CONTINUOUS HEAT TREATING

Moving thousands of pounds of bolts per hour through 1150° F. temperatures is a cinch for rugged Cambridge Woven Wire Belts because they're designed to take high temperatures with a minimum of operating trouble and maintenance. And, open mesh construction assures high product uniformity. Furnace heat flows through the belt and around product for fast, thorough processing.

In cleaning, brazing, oiling and quenching operations, too, Cambridge Belts help increase production and maintain high product uniformity. Here's how:

CONTINUOUSLY MOVING BELTS ELIMINATE BATCH PROCESSING—give faster, less costly production; reduce slow, costly manual handling.

ALL-METAL CONSTRUCTION IS HEATPROOF, COLDPROOF, ACIDPROOF—Cambridge Belts can be woven from any metal or alloy to take sub-zero or up to 2100° F. temperatures, yet remain impervious to attack from water, acids or caustic solutions.

OPEN MESH PROVIDES FREE AIR, LIQUID CIRCULATION—gives more uniform heating, cooling, drying; permits flash drainage of solutions, rapid washing, quenching and cleaning.

SPECIAL SURFACE ATTACHMENTS AVAILABLE—raised edges or cross flights to hold product on belt during movement.

Talk to your Cambridge Field Engineer soon—he'll explain the many advantages of continuous heat treating on Cambridge Woven Wire Belts. He'll recommend the belt size, mesh or weave—in the metal or alloy—best suited to your operations. You'll find his name in the classified phone book under "BELTING, MECHANICAL". Or write for FREE 130-PAGE REFERENCE MANUAL giving mesh specifications, design information and metallurgical data.

The Cambridge Wire Cloth Co.

WIRE CLOTH | METAL-MESH CONVEYOR BELTS | WIRE CLOTH FABRICATIONS

Department J, Cambridge 10, Maryland

OFFICES IN PRINCIPAL INDUSTRIAL CITIES

ing followed: Improvements in scrap handling, widespread use of oxygen for refining, fast-acting refractory guns and throwing machines for repairing banks and side walls, and experiments with hot metal additions.

Scrap Dominates—Most of the large furnaces use a 100 per cent scrap charge. A typical charge for a furnace tapping 130 tons of carbon steel would be: Heavy scrap, 100,000 lb; light scrap, 180,000 lb; mill scale, 14,000 lb; lime, 12,000 lb. The usual slag volume is much lower than that used in an open hearth heat, generally 3 to 5 per cent of charge weight.

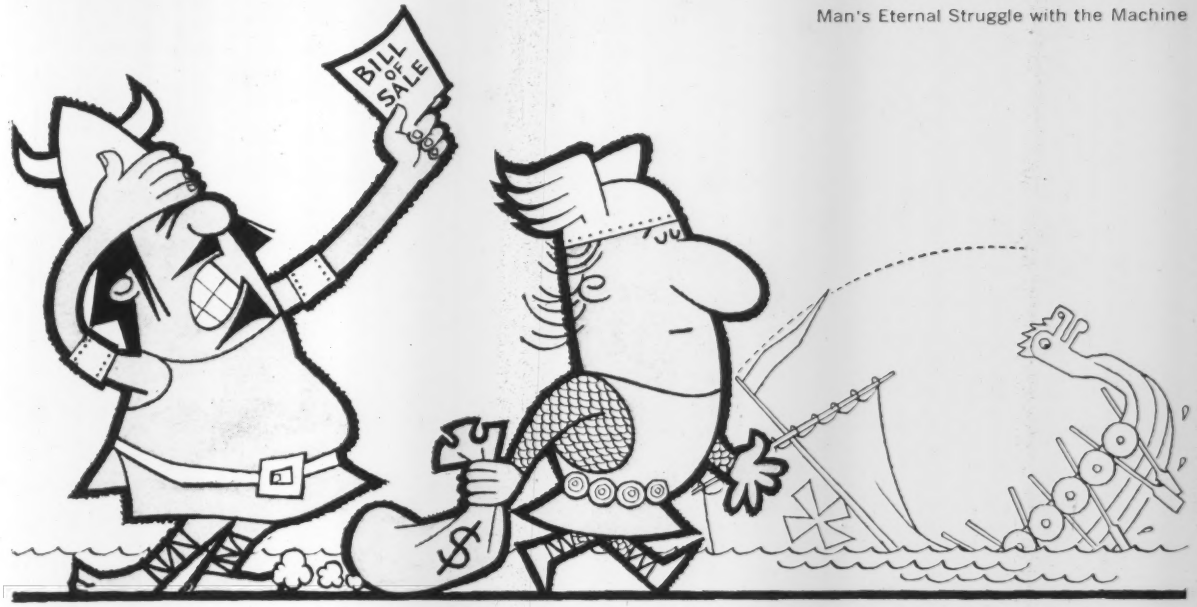
In shops where hot metal is available, additions have been made ranging up to 40 per cent of the total charge. The practice reduces charging time, electrode consumption, and power consumption, at the expense of lower metallic yield. The shorter tap-to-tap time possible and the relative costs of scrap and hot metal are the chief factors governing the practice.

Early users of hot metal became discouraged when the heats reacted violently. Today, by charging the hot metal early and working the heat carefully, 40 per cent hot metal is being used without serious spillouts.

Some Cost Advantages—The capital investment cost for electric furnaces is about 50 per cent less than for a comparable tonnage open hearth shop. This is of major importance to companies with limited short range capital for expansion or entry into the steel market. It is also important to companies with long range capital when the return on invested capital with accrued interest is considered. (Capital investment charges must be considered part of the cost of each ingot ton produced.)

Of course, the electric furnace is at the mercy of fluctuations in the price of scrap (at least until hot metal practice or synthetic scrap made by direct reduction of iron ore become factors to reckon with). But it can utilize a cheaper grade of scrap than the open hearth for making plain carbon ingots, and the yield is higher by 1 to 3 per cent.

Cost Disadvantages — While initial capital investment and material costs tend to favor the elec-



PRECISE DEPENDABLE, AND CONSISTENT FABRICATING EQUIPMENT IS ESSENTIAL FOR PROFITABLE PRODUCTION

Where do equipment builders hide machines that won't work?

Far too many of them are hidden in customers' plants! And many successful men like yourself, who devise production processes and specify equipment, have gained invaluable experience from such painful, vendor mistakes.

But, regardless of the lesson involved, *your overhead* can't afford the lost production time and heavy expense while you rebuild, or test and prove the vendor's equipment for him. No matter how attractive the original price of the equipment, it's false economy if the price tag didn't itemize the extra money required to make it work right.

Sciaky has always accepted full vendor responsibility for delivering equipment *into production* according to your original specifications. That's why Sciaky resistance welding and production equipment is thoroughly tested and proved to do your particular job *before shipment.* That's why Sciaky equipment is commonly installed, qualified, and certified to the most rigid welding specifications in a minimum of time after delivery.

Why take less than the full advantage of consulting with a Sciaky Application Engineer the next time you are considering equipment. No obligation, of course.

Manufacturers who must satisfy the highest requirements of dependability, consistency, and performance for either research and development or production take that advantage.

Documented case histories of manufacturers who have taken full advantage of Sciaky Techniques of Resistance Welding are presented in the publication "Resistance Welding at Work." Write for copies and advise your field of interest.

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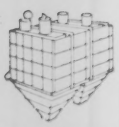
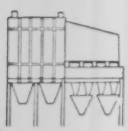
BUELL CYCLONE



"SF" ELECTRIC PRECIPITATOR



PRECIPITATOR-CYCLONE COMBINATION

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tric furnace, items of ingot cost above material costs ("cost above") still favor the open hearth. For instance, open hearth fuel costs are lower than electric power costs for both cold and hot metal practices. So are open hearth, mold, and steel costs per ingot ton.

The lower costs for electric furnace maintenance and repairs and a slight advantage in lower labor hours are overshadowed by the large tons-per-operating-hour characteristic of an open hearth shop.

In making such comparisons, the great difference in size of furnaces has to be compensated for. And you can't in fairness compare a new installation of one kind with an old one of another.

Where We Stand—There's wide agreement that for nonintegrated cold metal operations the electric furnace has a sizable cost advantage. As a result, we can expect expansion in the use of electric furnaces for plain carbon ingots in some parts of the U. S.

But the electric furnace is not competitive with hot metal open hearths on a cost basis. It will take large changes in the relative costs of scrap and hot metal and of fuel oil and electric power to make it so.

Further, changes in the design of the electric furnace are required for most efficient hot metal usage. The furnace should be larger, with more hearth area and less bath depth (or a stirred bath).

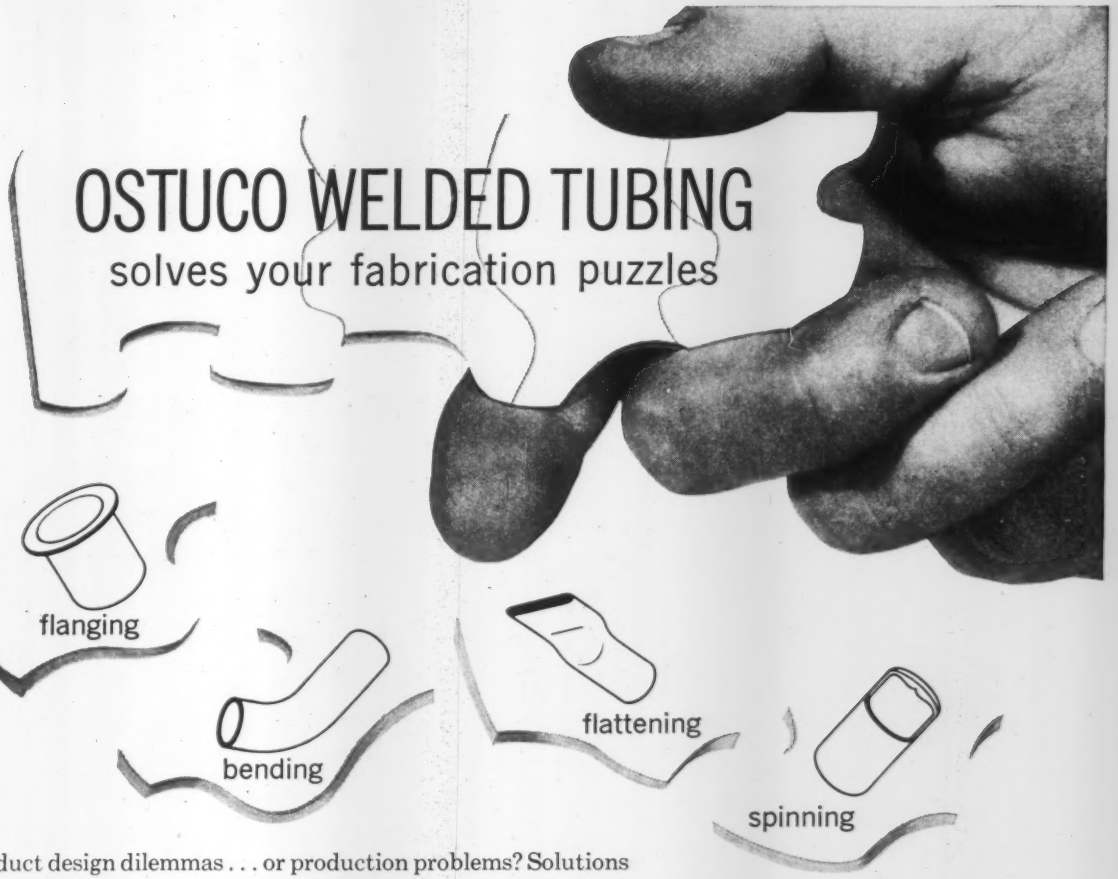
New Directions — Whether any company will be willing to risk sufficient capital to attempt to overcome the disadvantage of the present electric furnace design for hot metal use is questionable. More furnaces and more talent are available for programs directed toward lowering costs and improving operation of open hearths.

Of course, the efficiency of the electric furnace has been improving steadily too, and relative rates of improvement will bear watching.

A third furnace for carbon steelmaking, the oxygen converter, is certainly going to exert a major influence over expansion of both open hearth and electric furnace shops. The most realistic hope for immediate expansion of electric furnaces is in cold charge operations, with the possible use of directly reduced iron charges.

OSTUCO WELDED TUBING

solves your fabrication puzzles



Product design dilemmas . . . or production problems? Solutions to these perplexing puzzles fall right into place *naturally—with Ostuco Welded Tubing.*

First, Ostuco Welded Tubing is one of the most versatile of all materials. It can be subjected to virtually every fabricating operation known.

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Titanium Alloy List Grows

Mallory-Sharon Metals Corp. has developed four new ones. They include age-hardenable, weldable, pressure tubing, and experimental types to help solve problems

AIRCRAFT and missile manufacturers have four new titanium alloys on their list of problem-solving materials.

Developed by Mallory-Sharon Metals Corp., Niles, Ohio, they greatly enlarge the potential uses for titanium in that industry. Frank H. Vandenburgh, president, says the new materials offer significant improvements over the titanium alloys now being used.

Honeycomb Material — One, designated MST - 2½Al - 16V, may prove competitive with other metals as a honeycomb structural material. It can be easily worked in its low-strength condition, then age hardened to high tensile strength.

It contains 2½ per cent aluminum and 16 per cent vanadium. In its solution-treated form, yield strength is less than 65,000 psi and elongation is more than 10 per cent. Aging treatments can develop tensile strengths of 155,000 to 200,000 psi.

Other Advantages — Two other significant factors which contribute to the alloy's use in honeycombs are its heat treat cycle and ductility. Heat treatment of the material coincides with the brazing cycle for honeycomb structures. Its high ductility makes it suited to continuous rolling processes used to produce the foil for honeycomb.

Available in sheets, strip, bars, billets, and wire, the material exhibits a high tolerance for hydrogen —at least 500 ppm. That is four times the hydrogen tolerance of present commercial titanium alloys, explains Lee S. Busch, Mallory-Sharon's technical director.

MST-2½Al-16V has shown better corrosion resistance than pure titanium in certain media. That gives the material high potential as pressure tubing for use in acid or other corrosive media.

Weldable Alloy—Second in the new group is MST 821, containing 8 per cent aluminum, 2 per cent columbium, and 1 per cent tantalum.

It was developed to be arcweldable, and retain high strength and good ductility. It has excellent high temperature strength. Its properties will allow titanium to expand further into the missile industry, where weldability is a must.

As a forging material, MST 821 can be used in the new generation of jet engines for rotors and blades.

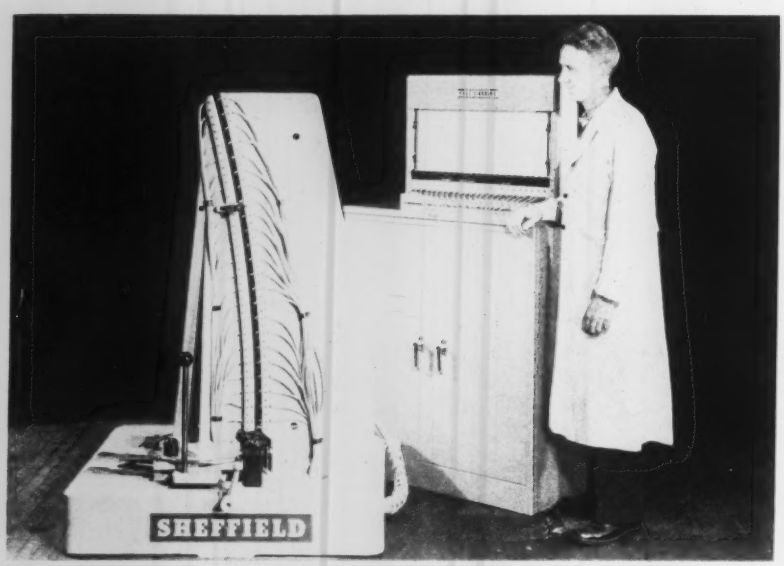
Experimental — Another is MST 185, which Mallory-Sharon metallurgists describe as an experimental material. Its composition is based on an alloy having high strength in the annealed condition. It requires no additional heat treatment.

The same material, when age-hardened, has shown tensile strengths as high as 260,000 psi, compared with steel at over 400,000 psi. This titanium alloy also has a heat treat cycle compatible with honeycomb brazing cycles.

Tubing Alloy — The fourth is MST-3Al-2½V. It contains 3 per cent aluminum and 2½ per cent vanadium. Mallory-Sharon says it is the first titanium alloy specifically designed for high strength tubing.

It's described as highly weldable, formable, and corrosion resistant. Tubing made from the material can be flared 50 per cent or more. By suitable age-hardening treatment, the tubing can be strengthened after fabrication to a tensile strength of 120,000 to 130,000 psi.

Except for MST-185, all are available in standard mill shapes.

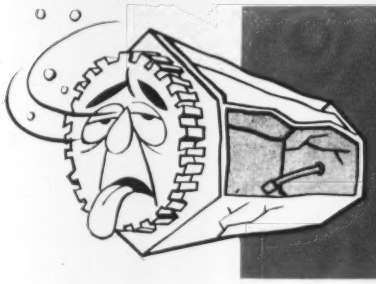


THIS MISSILE NOSE CONE GAGE measures wall thickness at 23 points simultaneously. Sheffield Corp., Dayton, Ohio, a subsidiary of Bendix Aviation Corp., built it. Opposed pairs of matched Plunjet cartridges activate the instrument. A sliding Airechart is engraved with color-coded tolerance lines that also define angular or axis position

Bolts for Buildings

A survey of building commissioners by Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y., shows that all but two of the 25 largest cities in the U. S. have changed building codes to permit the use of high strength bolts in the erection of steel structures.

Special permits may be obtained in cities where building codes have not been changed. It is estimated that 75 per cent of all steel structures are now joined with bolts.



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Get ready today for tomorrow's upswing in business! Have your plating facilities geared to peak performance . . . avoid the risk of costly down time during peak periods of production. Take inventory of your equipment needs . . . and the condition of your plating barrel equipment. Then let your Udylite sales engineer give you on-the-job quotations for repairs or replacements. When your equipment is sent to Udylite . . . you are guaranteed a definite return delivery date. A special department handles your order all the way through . . . costly down time is kept to an absolute minimum.

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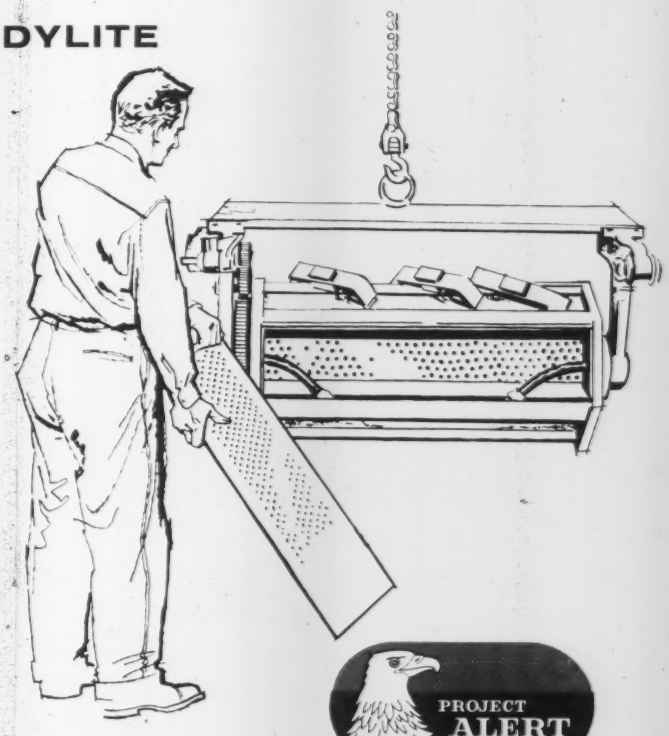

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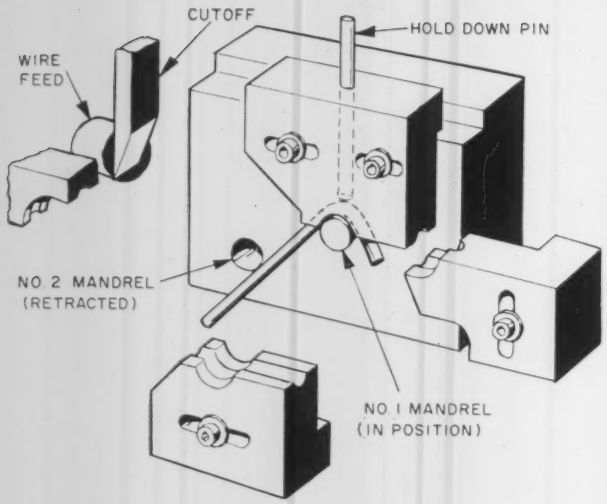
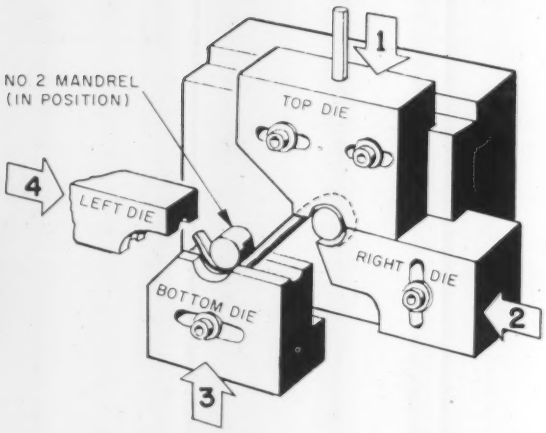


Wire (or strip) feeds into position over No. 1 mandrel. Positive, cam-operated, holddown pin contacts stock first, followed by top forming die and cutoff



No. 2 mandrel moves into position, followed by right tool and bottom die. Left tool does final forming in Torrington's vertical concept

Four Slides Ease Complex Forming

Large quantities of clips, hooks, and gadgets are often cheaper to make on this type equipment. New vertical concept greatly simplifies setup and operation

MANUFACTURERS of complicated parts made of wire or strip have a new tool to aid them in cutting costs: A vertical version of the four-slide forming machine.

Werner Vogt, who designed one of the first machines for Torrington Mfg. Co., Torrington, Conn., stresses these advantages: Great accuracy, high production, and a high degree of versatility in forming exceptionally intricate parts. Changeover from one part to another is fast. Even with high tool costs, he says the method can compete with progressive dies and separate press operations.

What Is It?—At the heart of such machines are four slides arranged like spokes of a wheel. They move toward and away from a common center and form strip or wire which is fed from one side. Retractable mandrels are at the center.

The vertical version gets its name from the arrangement of tools and slides—the old standbys, horizontals, have them arranged on a flat bed.

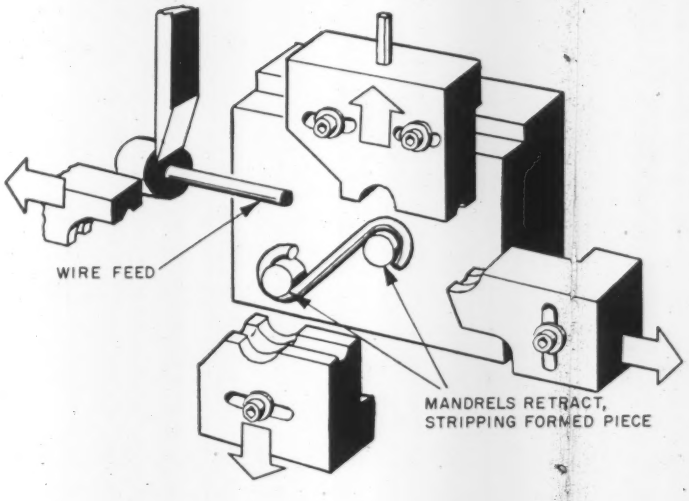
The machines have auxiliary equipment (small presses, for example) placed in line and co-ordinated with the slide action by adjustable cams and keyed shafts. They have enormous flexibility and accuracy since almost every action or movement is adjustable.

Stock is threaded through a straightener, feed, wire stop, presses, cutoff, and the tooling area where the four slides operate.

Why This Design? — Torrington believes that there are many advantages inherent in the vertical concept. Visibility is greatly improved because there are no dies or moving parts between the operator and the part being formed. Dies, slides, and mechanical adjustments are waist high and easy to get at.

A vertical machine can do some jobs much more simply than a horizontal; in fact, says Torrington, it will handle some jobs you can't do on a horizontal type. (It handles much larger parts, for example.) You can also use the center form more easily because it is supported from behind. There's more room to fit dies, forming parts, and punches. Pins and mandrels can be withdrawn.

Other Features—A cam-operated, positive stock clamp is an improvement over spring-operated types.



After all tools and holddown retract, mandrels are pulled back to strip formed piece. (Stripping action also flattens part.) By attaching wire runners to each mandrel, finished parts can be led to automated setup or stored for later use

Parts don't ride the center form or drag, a condition prevalent when tools are dull or loose.

Proper lubrication was one problem Torrington ran into. Since slides and ways are vertical, grease and oil tend to drip, leaving the top dry. A central lubrication system overcomes the effects of gravity.

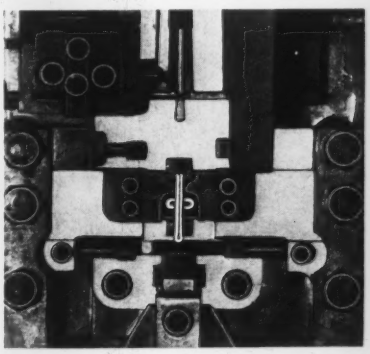
A constant torque flywheel and clutch similar to those on large presses permit inching and faster setups. Removable slides simplify repairs.

Four-Slide, vs. Progressive—Which is cheaper is a problem faced by many production men. Four-slide work, say experts, produces better quality than progressive dies, takes less setup time, and makes more parts per set of tools.

Initial cost is one drawback: One machine costs more than two or three standard presses. And it is possible on extremely complex jobs to pay more for a set of tools and dies than the original cost of the four-slide.

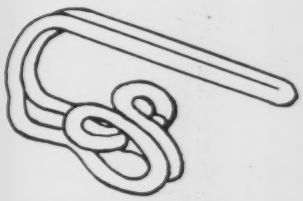
General Rules—If a part must be bent in several planes, production probably is cheaper on a four-slide. Cost of material may be lower generally, and there is less scrap. If tooling is expensive, the cost is offset by longer life, say equipment makers. Maintenance costs are more easily controlled because the load on each station can be controlled through built-in adjustments.

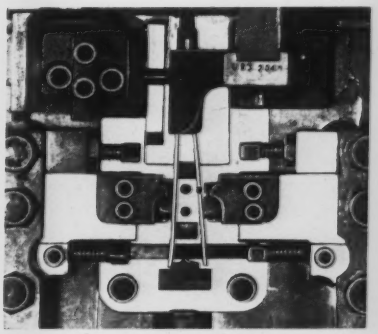
Sources—Major builders of four-slide equipment also include A. H. Nilson Machine Co., Bridgeport, Conn.; Baird Machine Co., Stratford, Conn.; and U. S. Tool Co., East Orange, N. J. (also a major producer of tools and dies for such applications).



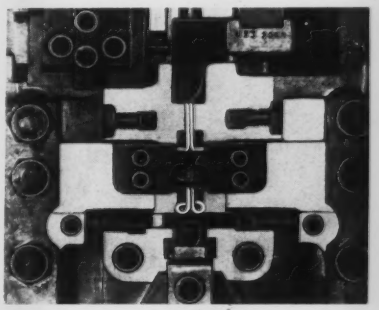
Last step shows completed drapery hook. Experts point out that without a vertical four-slide it's virtually impossible to form a difficult part like this one without resorting to separate operations on different machinery

Forms Drapery Hook

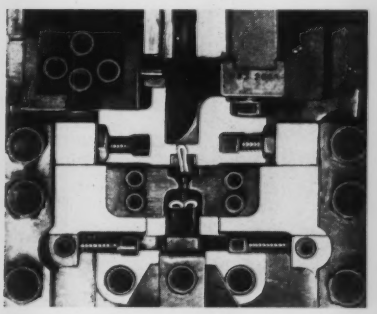




First operation to make drapery hook is this bend. Wire feeds from left on this Meyer, Roth & Pastor design. Retractable mandrels form back eyes

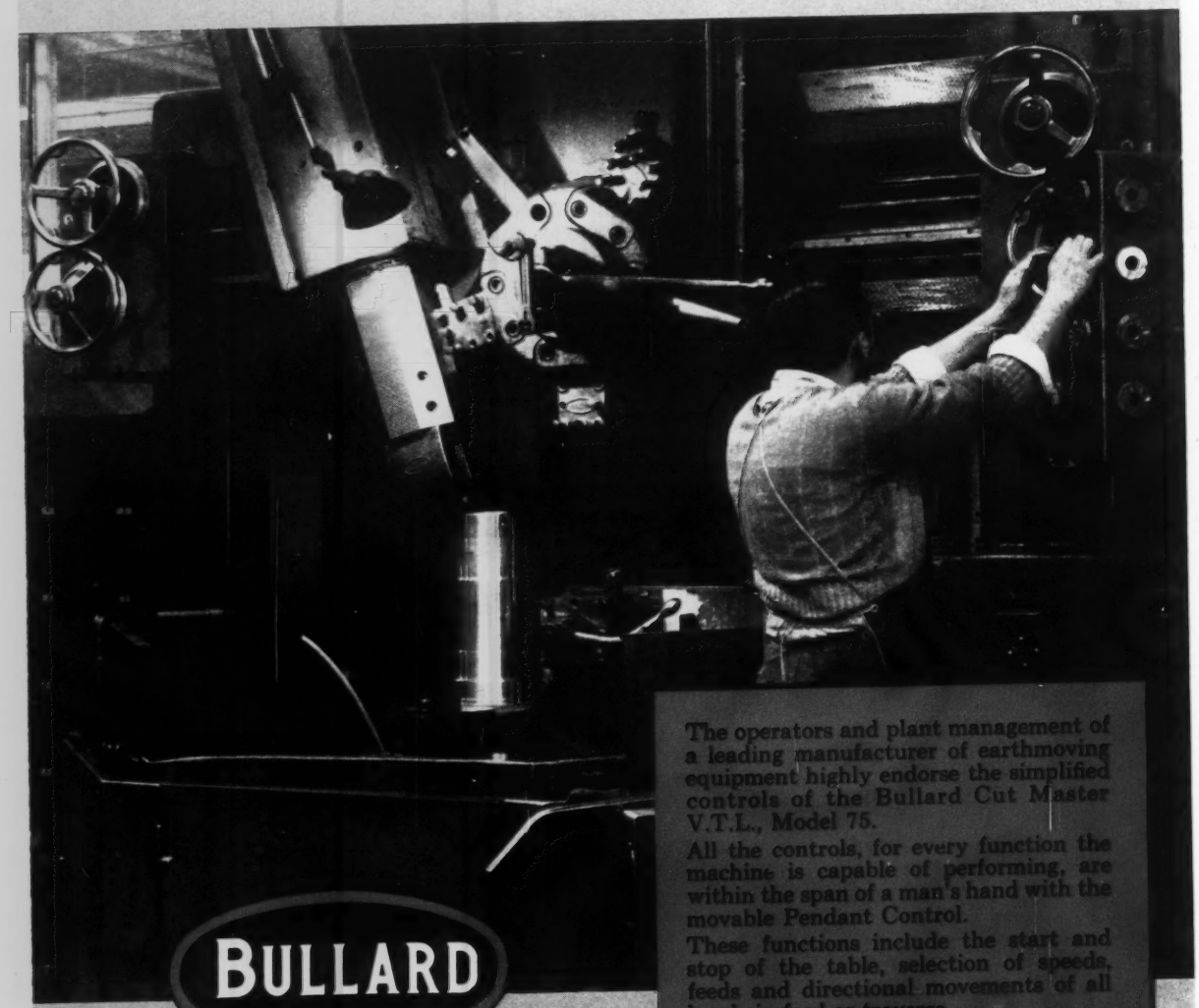


Second step: Left and right tools move in to close bend and form two eyes on back of hook. Bottom tool moves up to start forming the end eyes



Third: Completed eyes are being bent into final position by bottom tool while the first bend is being lowered by the top tool

Simplified Controls win enthusiastic approval



The operators and plant management of a leading manufacturer of earthmoving equipment highly endorse the simplified controls of the Bullard Cut Master V.T.L., Model 75.

All the controls, for every function the machine is capable of performing, are within the span of a man's hand with the movable Pendant Control.

These functions include the start and stop of the table, selection of speeds, feeds and directional movements of all heads in feed or traverse.

This feature, a Bullard exclusive, improves the efficiency of the operator and increases production.

To cut costs when cutting metal

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The Bullard Company

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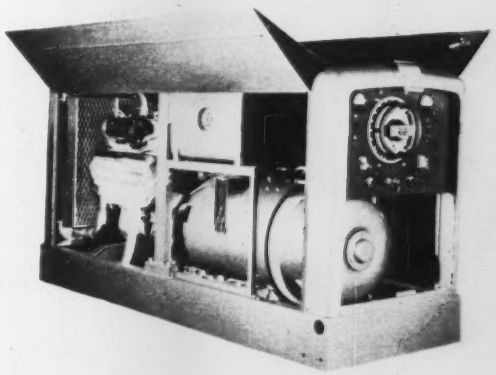
Heavy Duty Welder Has Power Choice



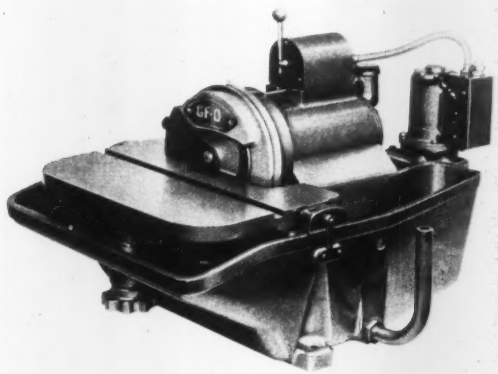
This direct current, heavy duty welder is for arc and studwelding. It is rated at 600 amperes, 40 volts on 60 per cent duty cycle.

The welding current range is 70 to 800 amperes, and 1 kw auxiliary power of 11 volts is available while welding.

A gasoline powered model, GM-618-S, is powered by a Chrysler IND-56A; the diesel model, DM-618-S, is powered by a General Motors 3055C.

A paralleling attachment is available to facilitate combining two units for 1200-ampere capacity in stud or automatic welding and arc air cutting. The device has a magnetic contactor controlled by pushbutton and protective current relay. *Write*: Hobart Bros. Co., Hobart Square, Troy, Ohio. *Phone*: Federal 2-1223

Machine Grinds and Laps With Oscillating Motion



The GF-O oscillating grinding and lapping machine is used with this firm's steel bonded diamond wheel. With it, unskilled operators can produce a quality edge on tungsten carbide tools.

Automatic oscillation of the head eliminates operator fatigue and produces a straight edge at the rate required. It also avoids the forming of facets on the cutting edge of the tool and provides even wear over the face of the diamond wheel.

Right-hand and left-hand tools can be worked efficiently because of a reversible guard that gives maximum access to the wheel. Tool height acceptable under the guard is 1¾ in. *Write*: Wickman Mfg. Co., 10325 Capital Ave., Oak Park (Detroit 37), Mich. *Phone*: Lincoln 6-3737

Corrosion Resistant Pumps Have Increased Capacity

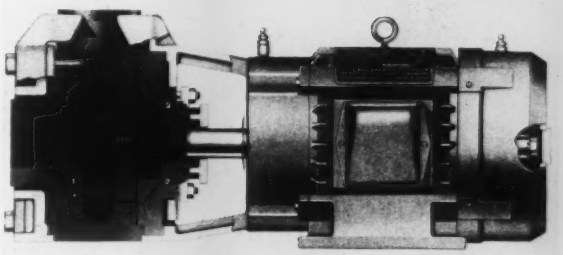
Three sizes of corrosion resistant centrifugal pumps have been added to the line of Karbate impervious graphite pumps.

Models 22-FAL, 28-FAL, and 31-FAL are equipped with 1, 1½, and 2 hp, 1750 rpm motors. Two can deliver up to 150 gpm—compared with a top of 80 gpm for the previous Type F models.

Maximum total head for each is 33, 51, and 67 ft.

The almost universal corrosion resistance of these pumps makes them ideal for metal finishing and chemical industries.

They permit reduction of inventories through pump and replacement part standardization. *Write*: National Carbon Co., 30 E. 42nd St., New York 17, N. Y.



NEW PRODUCTS and equipment

Improved Press Is Compact

Compact, fully enclosed design is the chief feature of the redesigned R series of 20 ton, single pressure, powder metal and ceramic compacting presses.

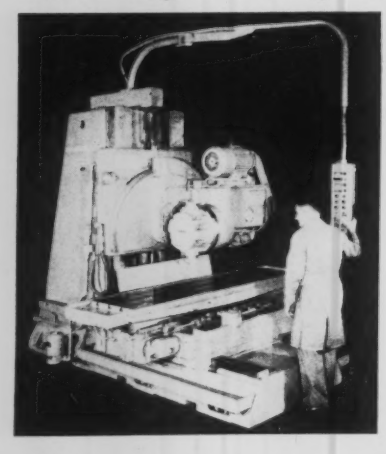
The machines can make parts up

to 3 in. in diameter and 2 in. depth of fill—at a rate of 16 to 48 pieces a minute.

They can be modified to permit the use of a floating die table, and a clutch and brake can be added to the drive system. *Write*: F. J. Stokes Corp., 5500 Tabor Rd., Philadelphia 20, Pa. *Phone*: Cumberland 9-0100

Unit Mills at Any Angle

This Omnimil combines the rigidity of a heavy duty milling machine with the range of a boring mill



and offers the versatility of an all-angle head.

The double spindle head can be adjusted to any angle, minimizing the amount of workhandling necessary when machining in a number of planes. The low speed spindle for ferrous material has a range of 25 to 400 rpm; the high speed spindle for nonferrous has a range of 250 to 4000 rpm. Both have quick speed changes. *Write*: Sundstrand Machine Tool Co., Rockford, Ill. *Phone*: 2-4477

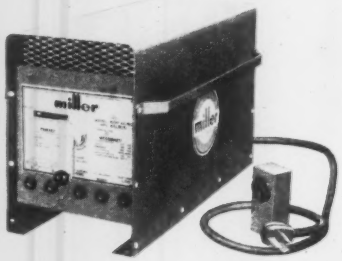
Units Do Tangent Bending

A line of air operated tangent bending machines is designed to meet the need for inexpensive, light duty equipment.

They handle radius or square bends in sheet metal, extruded or tubular sections. Single wing, duplex, and quadriplex models are available. *Write*: Taylor-Winfield Corp., Warren, Ohio. *Phone*: 2252-1

Welder Is Versatile

The 180 Twin, ac-dc, transformer-rectifier welder is small yet delivers



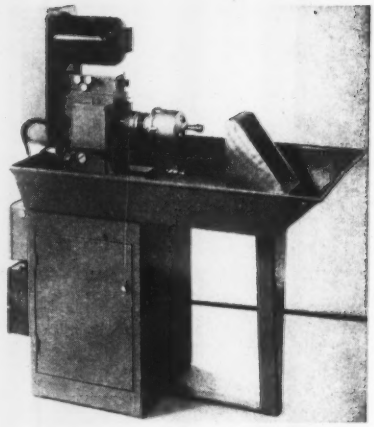
two alternating current ranges (20 to 115 and 60 to 180 amperes) and one direct current range (40 to 150 amperes).

Output is adequate for nearly all needs of job shops and small industry. *Write*: Miller Electric Mfg. Co. Inc., Appleton, Wis. *Phone*: Regent 3-6621

Drills Automatically

This single spindle, horizontal drilling and tapping machine has a full range of automatic controls. It is provided with a magazine feed that is adaptable to hopper use.

A simple electrical circuit syn-



chronizes spindle operation with any feasible clamping, positioning, indexing, or escapement mechanisms, and allows manual control for setup or test runs.

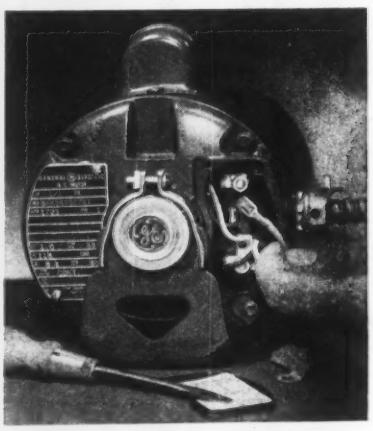
Infinitely variable cycle control ranges up to 500 strokes a minute. Capacity is 0.020 to $\frac{3}{8}$ in. drilling in mild steel and up to $\frac{3}{8}$ in. for tapping. *Write*: Unimatic Machine Products Inc., 9545 Ainslie St., Schiller Park, Ill. *Phone*: Gladstone 5-7720

Motor Cuts Costs

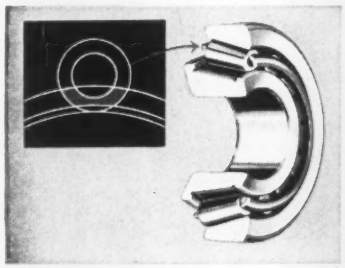
Major changes in Form G fractional horsepower motors will enable users to reduce assembly and maintenance costs.

The features include plug-in quick connects for all terminals, quick change of rotation by reversal of two plug-in motor leads, and brass links that simplify voltage change on dual voltage motors.

An antirust-treated shaft and bright-plated hardware protect against corrosion, and a built-in lug provides a convenient ground-



Tomorrow's "dream" is our job today!



HIGHER FLANGE IMPROVES ROLLER ALIGNMENT

As shown by the gray area above, the higher flange provides a large two-zone contact area for the roller heads. This greatly reduces wear—practically eliminates "end play". Larger oil groove provides positive lubrication.

There's more to the car of tomorrow than just futuristic styling! Automotive engineers are working to perfect completely new power plants—like turbine engines—to achieve yet-unheard-of performance and economy! And they demand bearings that are as advanced as their thinking. This is no new challenge to Bower engineers. A glance at the design features listed at left will tell you a few of the many original Bower contributions to bearing performance which have reduced bearing maintenance and failure to a practical minimum. There are many more in the making. If your product is one which needs advanced bearings *today* plus realistic planning for the future, specify Bower. There's a complete line of tapered, straight and journal roller bearings for every field of transportation and industry.

BOWER ROLLER BEARING DIVISION
FEDERAL-MOGUL-BOWER BEARINGS, INC. • DETROIT 14, MICHIGAN

SPNER BOND

BOWER ROLLER BEARINGS

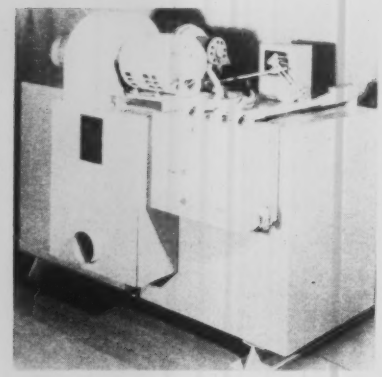
ing connection. *Write*: General Electric Co., Schenectady 5, N. Y. *Phone*: Franklin 4-2211

Device Drys Air

A small industrial dehumidifier provides continuous, low-volume drying of air and gas. The Model A12 is a compact dual tower, absorption unit capable of handling up to 70 cu ft of air a minute.

It will remove as much as 30 lb of water vapor in 24 hours, and operates efficiently at any temperature.

The unit is available with controls for use in a room, or with a constant humidity regulator for maintaining close tolerances (±0.5 per cent relative humidity) in a



cabinet, oven, or stream of air. *Write*: Eng. A Div., Universal Dynamics Corp., Box 9814, Arlington 9, Va.

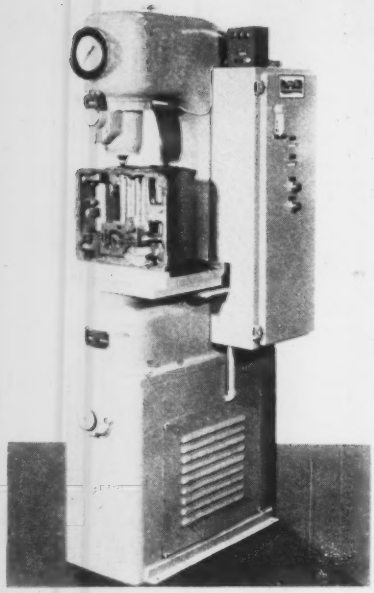
Cleans Delicate Parts

Rustclean 154, a rust and tarnish remover, is safe for use on thin cross sections and delicate finishes.

It removes light oils and grease films remaining after stamping and other fabricating operations. The compound gives corrosion resistance to the treated surfaces and acts as a treatment prior to painting or lacquering. *Write*: Octagon Process Inc., 34 Bank St., Staten Island 1, N. Y. *Phone*: Gibralter 7-5800

Color Indicates Hardness

This machine for production Brinell hardness testing where location must be accurate determines the workpiece position before it can operate. A limit switch must be depressed by the part before the cycle switch is energized.



Colored lights indicate the relative hardness: Too hard, yellow; too soft, red; and acceptable, green.

Throat depth is 10 in., maximum vertical opening 14 in.; loads of 500 to 3000 kg can be applied. *Write*: Steel City Testing Machines Inc., 8817 Lyndon Ave., Detroit 38, Mich. *Phone*: Webster 3-3500

Pumps High Vacuum

The Series 450 mechanical booster pump comes in standard sizes (230 to 12,000 cfm).

The lobe-type pumps have high pumping speeds over a range of 1 micron to 10 millimeters of mercury (absolute suction pressure). They are available as single-stage boosters for applications in high vacuum pumping systems. *Write*: General Vacuum Corp., 400 Border St., East Boston 28, Mass. *Phone*: Logan 7-8800

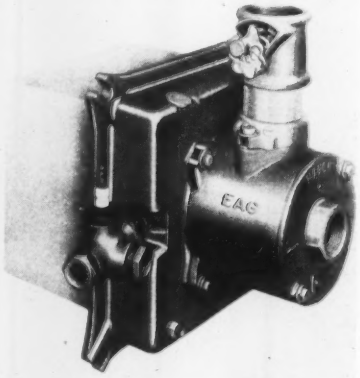
Dispenses Steel Strap

An easy operating dispenser, the F33 Steelstrap, requires only a slight effort to operate. It can be loaded by one man in less than a minute.

Strapping is taken from the inside of the coil through a coil spring guide—the spring action of the strapping turns the dispenser to keep the coil against the outside edge of the unit. Excess is rewound by the same spring action. *Write*: Acme Steel Co., 135th Street and Perry Avenue, Chicago 27, Ill. *Phone*: Interocean 8-9500

Burner Handles Excess Air

This excess air gas burner is for sealed-in firing in industrial furnaces, kilns, and other heat processing equipment. It produces a stable flame even with 1000 per cent or more of excess air.



Excellent control of flame temperature and dependable operation are obtained. Fewer burners are needed, and ignition is positive at any burner setting on hot or cold furnaces. *Write*: Hauck Mfg. Co., 124-36 Tenth St., Brooklyn 15, N. Y. *Phone*: South 8-7309

Reducers Installed Easily

These double reduction, hollow shaft worm gear speed reducers provide a complete range of reduction

Crawford Door Company uses J&L superior quality, oil-tempered spring wire in 18 sizes for torsion and extension springs. Springs range from a few feet long to giants over 12 feet long, capable of raising 3,500-pound industrial doors without effort.

"UNIFORM HEAT TREATING AND TEMPERING PAYS OFF IN SUPERIOR J&L SPRING WIRE"

...says Crawford Door Co. official

"J&L has a superior spring wire because of the control they are able to maintain in their heat treating and tempering operations," reports Mr. Jerome Fansler, vice-president of the Crawford Door Company, Detroit, Michigan.

"J&L spring wire is properly tempered. This means the wire will coil uniformly. There are no surface imperfections or potential breaking points."

Crawford Door uses J&L oil-tempered medium basic spring wire for torsion and extension springs. They buy 18 sizes, ranging from .192 (13/64") to .293 (19/64").

Every coil of J&L spring wire is thoroughly tested for uniformity of physical and dimensional properties. This uniformity can speed your production, reduce the number of rejects. J&L has complete control of wire quality from ore through finished product. When you specify J&L, you are sure of wire that is tops in quality yet competitive in price.

Next time you buy wire, call in your J&L representative for fast, satisfying service. Or write direct to Jones & Laughlin Steel Corporation, 3 Gateway Center, Pittsburgh 30, Pennsylvania.

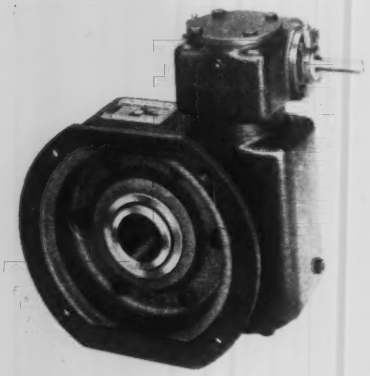
J&L STEEL

Jones & Laughlin Steel Corporation

PITTSBURGH, PENNSYLVANIA

ratios from 66 2/3:1 through 4466:1.

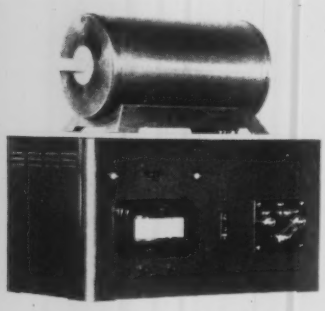
In both torque arm and flange mounted models, the units are compact and simple to install on the keyed shaft of the driven unit. Outputs are from 0.04 to 2.55 hp, and torques from 1473 to 7678 in.-lb.



Write: Winsmith Inc., 95 Eaton St., Springville, Erie County, N. Y.

Furnace Elements Static

The Series 6055 electric heat treating furnaces are made in six



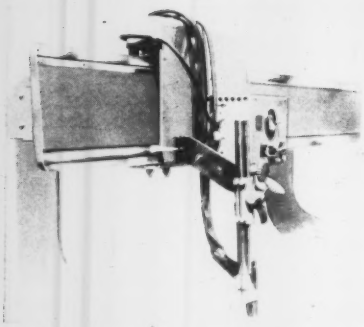
standard models with ranges to 3000° F.

Resistance of its Kanthal element (used in all models) does not change with use. This allows the connection of new and used elements in parallel or series without detrimental effect.

The furnaces are available in box or tube type. *Write*: Lucifer Furnaces Inc., Neshaminy, Pa.

Welding Track Is Accurate

Accurate production welding of foil steels and other metals as thin



as 0.003 in. is made possible with these precision side beam tracks. They are for alignment, support, and longitudinal traversing of welding heads and variable speed carriages above welding positioners.

The tracks are particularly effective in welding honeycomb panel facings, including 17-7 PH, AM-355, and AM-350 steels available only in 24-in. widths.

The units are available for weld lengths of 6, 8, 10, and 12 ft. *Write*: Airline Welding & Engineering, 785 N. Prairie Ave., Hawthorne, Calif. *Phone*: Osborne 5-2225

Grinder Tailored

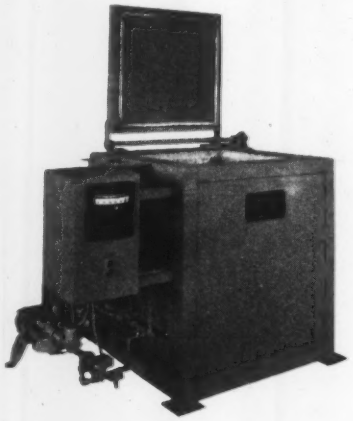
The Model DH-612 precision surface grinder can be used by any operator.

A 6-in. adjustment permits the best height to be selected for the operator (standing or sitting). The downfeed wheel is 12 in. out from the column, and each revolution equals 0.025 in. feed—half the travel of most grinders. This widens the calibrations so that split-tenth grinding is performed without eye strain. *Write*: DoAll Co., Des Plaines, Ill. *Phone*: Vanderbilt 4-1122

Heats Extrusion Dies

This heater for aluminum extrusion dies is completely refractory lined. Its temperature range is 400 to 1000° F; the work chamber is 24 x 24 x 18 in. deep.

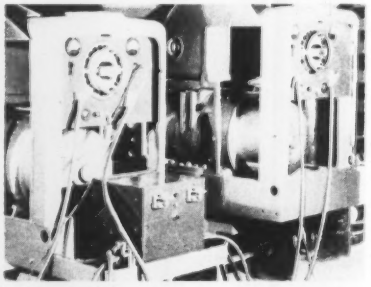
The unit is shipped assembled and ready to operate with gas, electric, or oil fired burners. *Write*: Carl Mayer Corp., 20800 Center



Ridge Rd., Cleveland 16, Ohio. *Phone*: Edison 3-0833

Device Parallels Welders

This attachment simplifies the paralleling of two arcwelders to



combine their capacity for automatic welding, arc cutting, and stud-welding.

A magnetic contactor is controlled by a pushbutton and by a protective current relay. Should the welders become unbalanced, current will flow in the equalizer circuit which will trip the protective relay.

The attachment can be used with any Hobart rotating type dc welder that is rated on the basis of 50 per cent duty cycle or higher. *Write*: Hobart Bros. Co., Hobart Square, Troy, Ohio. *Phone*: Federal 2-1223

The old rule that two heads are better than one is expanded many times over at the annual METAL SHOW where literally hundreds of the finest minds in the industry congregate to exchange new ideas and concepts. At the inspiring exhibits and in thought-provoking technical sessions, Metals Engineers, Designers, Administrators and Production Chiefs teach and learn simultaneously in the friendly "give and take" of information concerning their industry.

Today, as never before, the METAL SHOW is a must! Don't miss it. You'll come away stimulated and enlightened . . . better equipped to meet the challenges of an ever more complex and competitive metal market.

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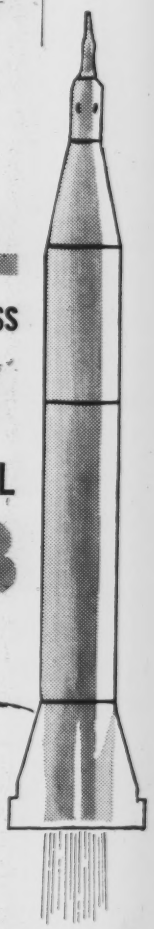

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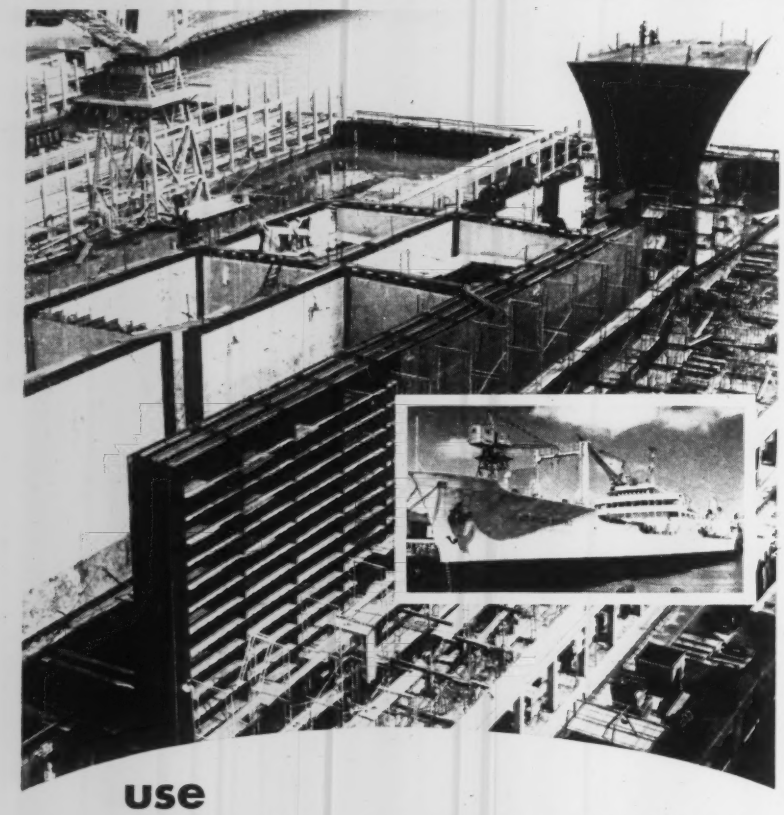
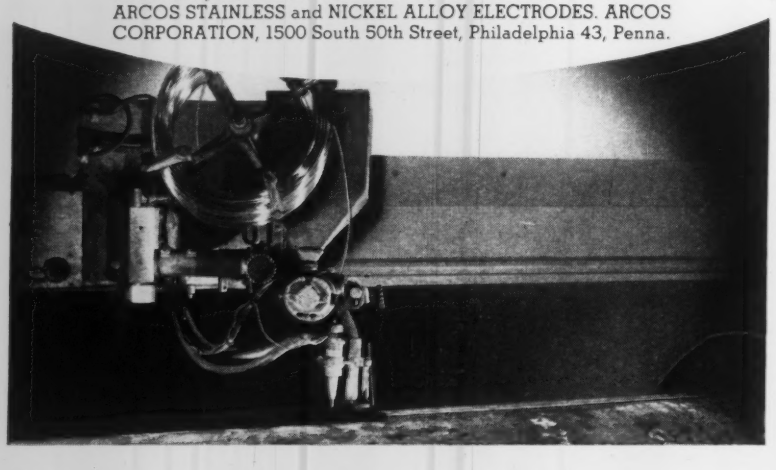
When submerged arc welding requirements are HIGHLY UNUSUAL!



use

ARCOSITE BONDED FLUX

The SS Angelo Petri—the first of its kind—is a new wine tanker carrying 26 welded cargo tanks with a 2 million gallon bulk capacity. Especially unusual was the use of submerged arc welding on both sides of the type 316 stainless-clad steel tanks. ARCOSITE C-17 FLUX and Arcos CHROMENAR 25/20 bare wire were used to assure proper physical, corrosion resistant properties, and joint soundness. To control dilution on the stainless side, the clad side was automatically gouged slightly by carbon arc. Another unusual achievement tending to retard corrosion was the cathodic—rather than anodic quality of the submerged arc welds. Write today for information on ARCOSITE BONDED FLUXES and ARCOS STAINLESS and NICKEL ALLOY ELECTRODES. ARCOS CORPORATION, 1500 South 50th Street, Philadelphia 43, Penna.



NEW Literature

Write directly to the company for a copy

Electrodes

Hard surfacing electrode catalog, No. MW-222, gives data on more than 25 electrodes and wires. A checklist helps in the selection of the correct electrode or wire for use on more than 400 types of welding equipment. Welding Products Div., A. O. Smith Corp., Milwaukee, Wis.

Conveyors

Catalog 856 describes conveyor systems. In-use installations are shown. Mathews Conveyer Co., Ellwood City, Pa.

Production Strapping

Folder SPD-190 describes accessories for increasing operator efficiency by suspending strapping machines in various positions. Portability also is discussed. Signode Steel Strapping Co., 2600 N. Western Ave., Chicago 47, Ill.

Data Processing

Folder U 1018, "Tape Spans the Distance," explains how common language data processing equipment can serve many plants in different locations. Remington Rand Div., Sperry Rand Corp., 315 Fourth Ave., New York 10, N. Y.

Palletizing

Report U6-19 shows the step-by-step procedure used to palletize wheel and brake assemblies. Acme Steel Co., 135th Street and Perry Avenue, Riverdale 27, Ill.

Hydraulic Press Brakes

Catalog No. 2024A describes a new line of hydraulic press brakes. Cleveland Crane & Engineering Co., Wickliffe, Ohio.

Stainless Steel

This booklet describes company's 304L and 316L type ELC (extra low carbon) stainless steel. They provide an economical means of preventing harmful carbide precipitation in stainless steel weldments. Product Information Service, Armco Steel Corp., Middletown, Ohio.

High Frequency Units

Bulletin No. 2250 shows the value of high frequency equipment as a means of increasing the output or efficiency of production machinery. Louis Allis Co., 427 E. Stewart St., Milwaukee 1, Wis.

Pusher Furnaces

Bulletin No. 463 describes Type BA pusher furnaces with ceramic heating elements for temperatures up to 2400° F. Three styles are covered: Open chamber and exposed heating elements, refractory muffle, and metallic muffle. C. I. Hayes Inc., 822 Wellington Ave., Cranston 10, R. I.

Pneumatic Products

Catalog No. 157 shows a complete line of automatic moisture separators, lubrica-

tors, regulators, filters, and filterators for compressed air systems. Wilkerson Corp., 1586 W. Girard Ave., Englewood, Colo.

Labeling

A booklet illustrates a low cost method for custom printing labels and tags. Weber Marking Systems, 215 E. Prospect Ave., Mt. Prospect, Ill.

Setscrew Driver

A bulletin describes the Setomatic setscrew driving device. It automatically feeds, inserts, and tightens socket type screws for single machines or automated production lines. Standard Pressed Steel Co., Jenkintown, Pa.

Vacuum Metallizing

Vacuum Metallizing Coatings for Metal, Glass & Thermosetting Plastics describes the coatings and various application procedures. Bee Chemical Co., 12933 S. Stony Island Ave., Chicago 33, Ill.

Wire Rope Lubrication

Wire rope life can be lengthened through proper lubrication, reducing costs. The necessity of lubrication, recommended lubricants for different types of wire rope and operating conditions, and how to apply lubrication in the field are covered in a booklet. Union Wire Rope Corp., 2100 Manchester Ave., Kansas City 26, Mo.

Slings

Form SL-3 covers more than 80 subjects on Tuffy slings and fittings. Included is reference information on types, dimensions, and rated loads in chart form. Union Wire Rope Corp., 2100 Manchester Ave., Kansas City 26, Mo.

Rotary Blowers

Bulletin AF-258 covers this firm's Type AF rotary positive blowers for a wide range of process industries, for vacuum or pressure. Roots-Connersville Blower Div., Dresser Industries Inc., 900 W. Mount St., Connersville, Ind.

Roller Conveyors

Bulletin RR-58 describes Rapid-Roller gravity conveyors. Sections on steel and aluminum conveyors and accessories are included. Rapids-Standard Co. Inc., 342 Rapistan Bldg., Grand Rapids 2, Mich.

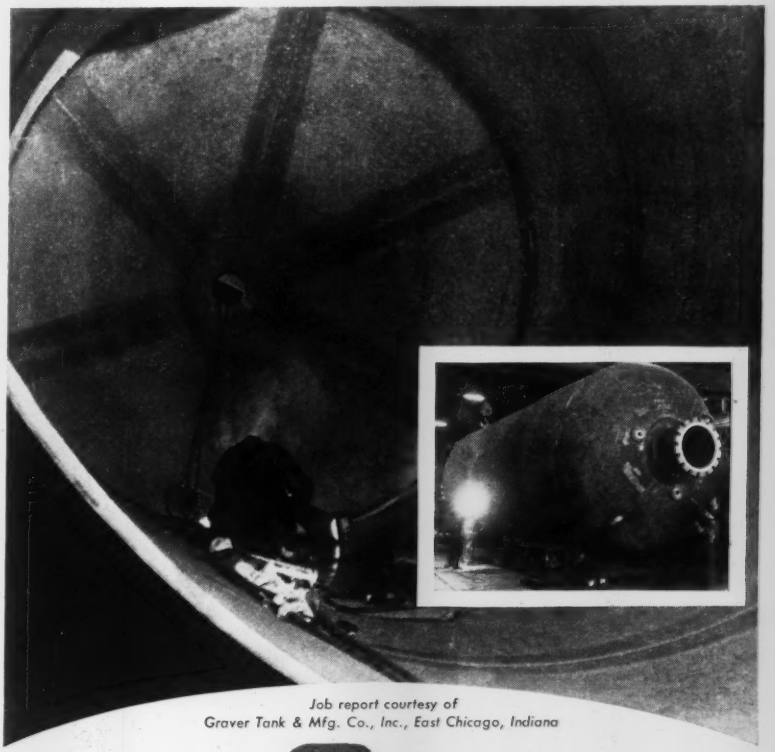
Motors

Bulletin GEA-6713 describes Tri-Clad 55 ac wound rotor motors. These units are for crane or general industrial use, 5 through 150 hp. General Electric Co., Schenectady 5, N. Y.

Coil Springs

This handbook describes heavy duty coil springs. Included are mathematical data and charts to assist buyers in meeting exact specifications. Spring Div., Crucible Steel Co. of America, Box 2518, Pittsburgh 30, Pa.

When stainless welds must be free of microcracks

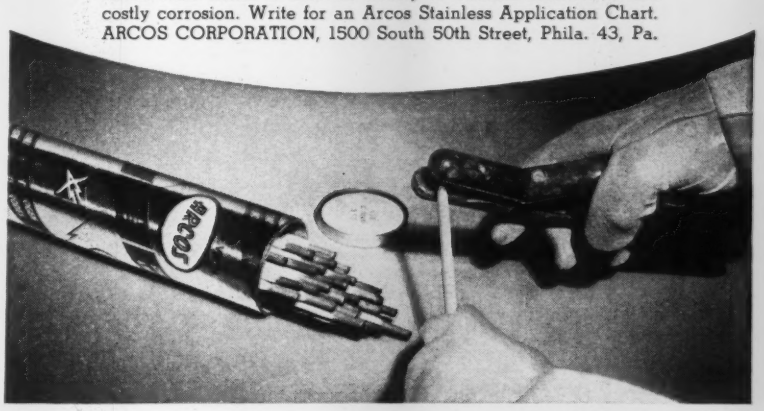


Job report courtesy of
Graver Tank & Mfg. Co., Inc., East Chicago, Indiana

WELD WITH ARCOS

STAINLESS ELECTRODES

This 93,400-lb. 3500 cu. ft. digester is installed at Finch, Pruyn and Company, Inc., manufacturers of printing and converting papers. It converts hardwood into paper pulp using highly corrosive acids at high temperatures, and pressures of 200 psig. The digester is made of Type 316 ELC 20% stainless clad on ASTM A-212 Grade B firebox steel. To assure sound, long-life corrosion-resistant welds, three grades of Arcos CHROMEND Electrodes were used. All welding was manual. The resultant welds were completely free of micro fissures or cracks—more proof why Arcos weld metal is used so widely to combat destructive and costly corrosion. Write for an Arcos Stainless Application Chart. ARCOS CORPORATION, 1500 South 50th Street, Phila. 43, Pa.



WHEN YOU MUST HAVE UNCOMPROMISING QUALITY

SPECIFY *Acme-Newport* **STEEL**

The relentless supersonic speeds of high-altitude missiles, Jatos and rockets demand unfailing performance in every element of their manufacture. As a regular supplier to this vital industry, Acme-Newport consistently exceeds the most critical specifications of prime and subcontractors for aircraft quality plate, sheet and strip in alloy and carbon grades. For utmost accuracy and attention to detail, talk to Acme-Newport, whose modern facilities, conscientious personnel and 73 years' steelmaking experience can deliver exactly what you want . . . *when* you want it, by fast Red Circle Service.

RED CIRCLE SERVICE EXPEDITES YOUR RUSH ORDERS

Acme-Newport Steel COMPANY

NEWPORT, KENTUCKY

A SUBSIDIARY OF ACME STEEL COMPANY

Market Outlook

Auto Peace Dispels All Gloom

STEELMAKERS' optimism hit a new high this week as the automotive industry moved into full production of 1959 models.

Detroit's steel buyers are releasing the orders they held back when wildcat strikes stopped their assembly lines. As they boost production, they'll expand their inventories from 14 to 30 days and try to keep them at that level. How often they'll buy will depend on how well the new cars sell. They're going to make a special effort to avoid overstocking.

WARM RECEPTION—First reports suggest that a good car year is in the making. At Detroit, Walter J. Cooper, Ford Div.'s general sales manager, says his advance orders for cars and trucks total more than $1 billion—enough to keep all Ford plants running overtime through November. In Pittsburgh, a Buick dealer exults: "Public reaction to our 1959 models has just been tremendous, the best since 1946. We delivered 43 cars in the first two weeks and wrote orders for more than 100. During the first two weeks last year, we sold no more than 20. We've set our 1959 quota at 1800 retail deliveries. During the 1958 model year, we sold 900."

APPLIANCE ORDERS UP—The market for sheets is also being bolstered by manufacturers of refrigerators, freezers, and washing machines. Their increased requirements reflect better sales. Norge Div. of Borg-Warner Corp. says last month's sales were 39 per cent better than those of September, 1957, and the best since October, 1956.

TUBULAR SPECIALTIES GAIN—Producers of mechanical tubing report substantial improvement in their sales. Automotive buying is chiefly responsible. Instead of placing orders every two weeks, the automakers are buying on a month-to-month basis. September shipments of one mill exceeded August's by 20 per cent.

PLATE SALES SLUGGISH—Consumer inventories of most steel products have been reduced to manageable size, but plates and structurals are still being liquidated. Structural fabricators delay buying depleted items until they get a job and can order from the bill of materials. "September plate bookings weren't up to our expectations," a mill executive reports, "but October entries are reasonably good. With a little luck, we'll do as well as we did in August, which was second only to June." Producers think November will bring continued though modest improvement. One mill is hoping for a 5 per cent gain.

SERVICE CENTER STOCKS DROP—The typical service center has enough steel on hand to meet a seven-month demand, estimates the American Steel Warehouse Association. In February, the average stock would have lasted 9.2 months; in March, 8.1 months. "This reduction is due to an improvement in sales, not a concerted inventory slashing program," says Robert G. Welch, executive vice president.

PRODUCTION HITS '58 PEAK—Last week, steelmaking operations hit a new high for the year. The ingot rate climbed 3 points to 71.5 per cent of capacity. Production was about 1,930,000 net tons of steel for ingots and castings. (During the corresponding week last year, the industry's output was 2,105,000 tons.) If the current rate of recovery is maintained, this month's production will be the largest since October, 1957—about 8.8 million tons.

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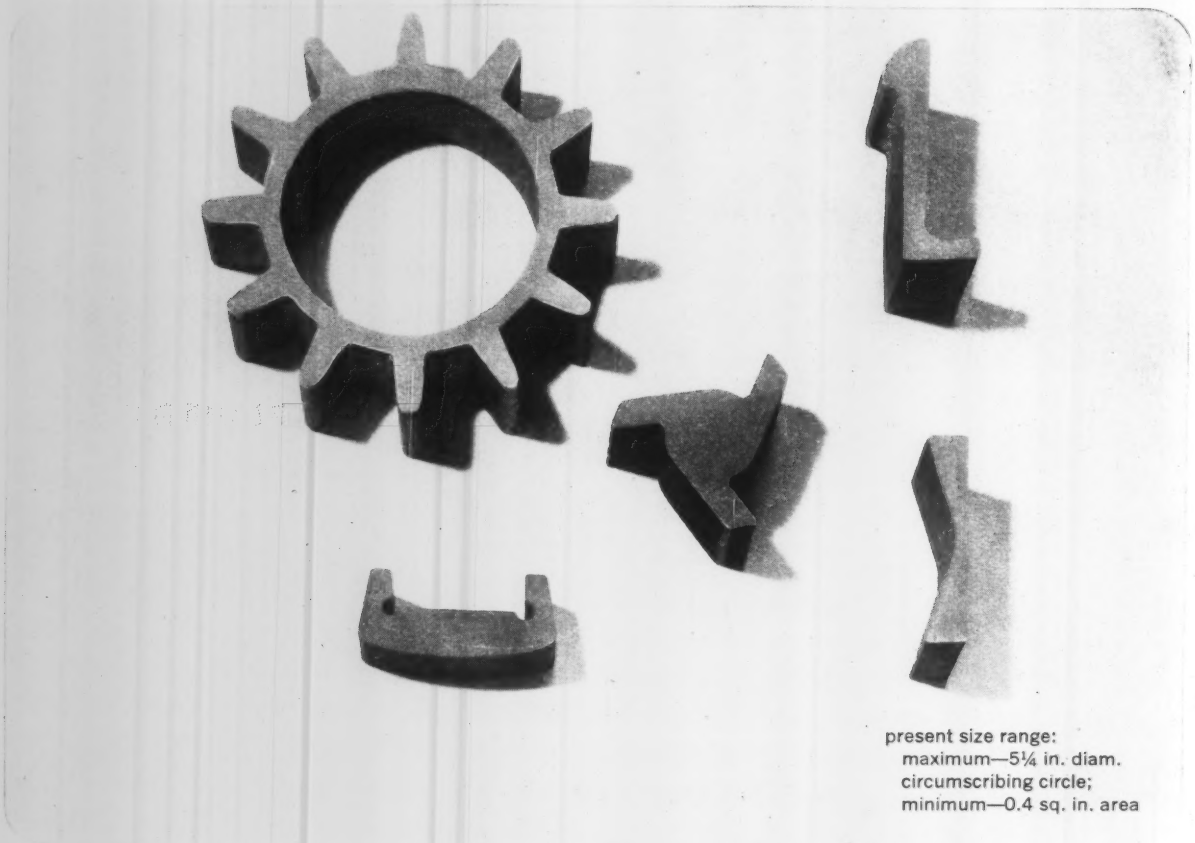

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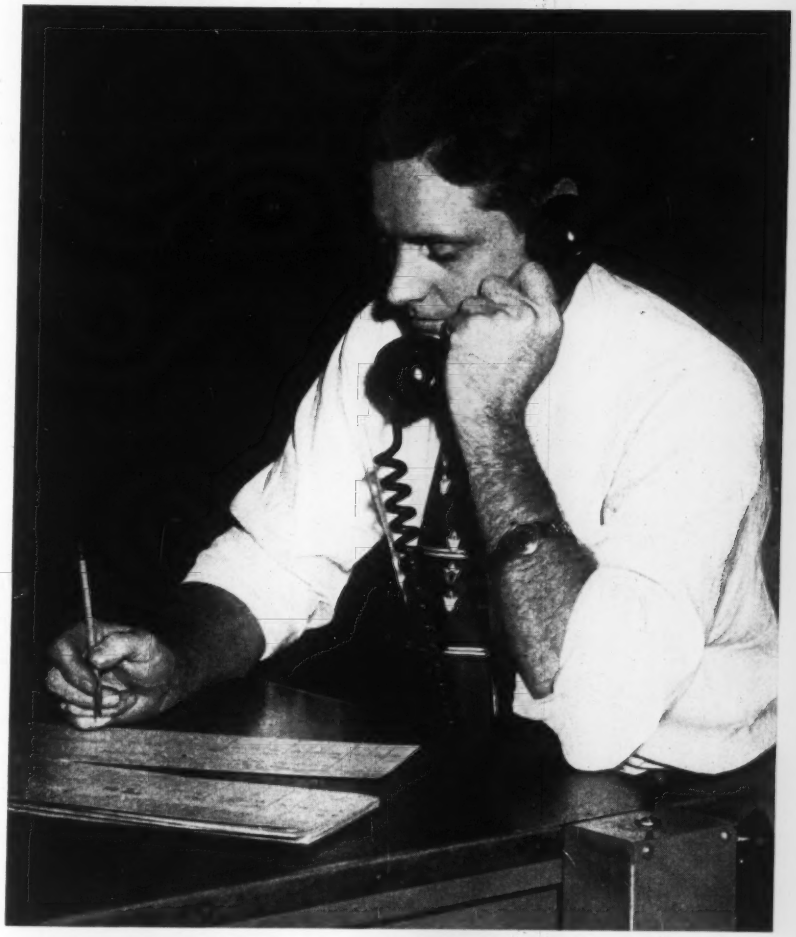


Mills Cut Jobber Discounts

All major producers but one reduce discounts on direct shipments of standard and line pipe from 5 to 3 per cent. One eliminates them on stainless steel plates

A NEW pricing structure in the distribution of standard and line pipe and stainless plates is taking shape.

Situation in brief: Discounts to distributors on direct shipments of standard and line pipe have been reduced from 5 to 3 per cent by all major producers except one (Lone Star Steel Co.). U. S. Steel has eliminated discounts to distributors on stainless plates.

Pipe—U. S. Steel Corp.'s National Tube Div. initiated action on this product. Its move on Aug. 1 had two objectives: 1. To cut the loss of revenue on "direct" shipments that were being diverted to distributors' stocks. (Warehouses aren't entitled to discounts on pipe bought for inventory.) 2. To discourage distributors from splitting their commissions with customers.

Many distributors claim that they can't make a profit on 3 per cent.

Stainless Plates—Early in August, U. S. Steel eliminated distributor discounts on stainless plates. Traditionally, distributors had been allowed 10 per cent on material they stocked and 5 per cent on orders shipped directly from the mill to their customers. The move followed a price reduction averaging about 6 per cent.

The corporation cut its prices to meet the competition of mills that were selling below published quotations. It eliminated discounts for two reasons: 1. To maintain profit margins on plates. 2. To prevent jobbers from splitting their commissions with customers on big orders.

Other stainless plate mills haven't altered their discount policies. Says one producer: "We're afraid we'd lose a big part of our representatives if we eliminated discounts. Some of our distributors are just agents. They don't stock plates, so they can't make any money by cutting or fabricating."

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 145

Buying of reinforcing bars is beginning to taper off—seasonally. Large tonnage needs have been purchased, and less volume, notably bridges, is being estimated.

Competition among fabricators and distributors is keen. Some suppliers at several points are virtually out of the market at the price levels currently quoted.

Highway and other public construction continues prominent in the market picture. Considerable volume is moving in lots of less than 100 tons.

Distributors . . .

Prices, Page 150

Demand for steel products from service centers is improving gradually. "We definitely believe an upswing is beginning," says Robert N. Harwood, administrative vice president and board member of Solar Steel Corp., Cleveland. "Auto production is a key to fourth quarter activity in this area, and with autoworkers' contracts signed, demand from that industry should increase."

Sheets and light structurals are moving the best in most districts. The pickup in bookings is nowhere near that which mills are expe-

riencing and is slower than had been expected.

In the Southwest, distributors are optimistic, believing October volume will be sizable. Pricewise, the market is firm, although heavy rains and a carpenter strike in the area have retarded construction and resulted in spotty movement of steel.

Importers in the Pacific Northwest, representing principally Japanese producers, are offering their products at reduced prices but sales are infrequent. Imports are held down by restrictions on the use of foreign materials on government projects.

Steel Bars . . .

Bar Prices, Page 145

Better prospects in the automotive industry are stimulating inquiry for merchant steel bars. Consumer interest is moderately heavier in hot and cold carbon bars, and, to somewhat lesser degree, in alloys.

Midwestern sellers consider current volume good, particularly in the smaller sizes. Cold finishers are buying hot bars a little more freely with automobile schedules moving up.

In New England, carbon and alloy orders are on a delivery basis, those producers promising earliest shipment getting the order. In general, hot carbon bars are available within two to four weeks.

Government shops and defense contractors are providing the bulk of improved demand in New England. General industrial requirements in the area are little changed with forge shop inventories substantial. In some cases, stocks include grades bought for specific requirements no longer in production.

Some barmakers are trying to keep their rolling cycles on a 30-day basis, but occasionally these lengthen to 45 days or so. A 60-day cycle is more economical because it entails fewer roll changes, but competition pretty much dictates maintenance of the 30-day cycle.

Sheets, Strip . . .

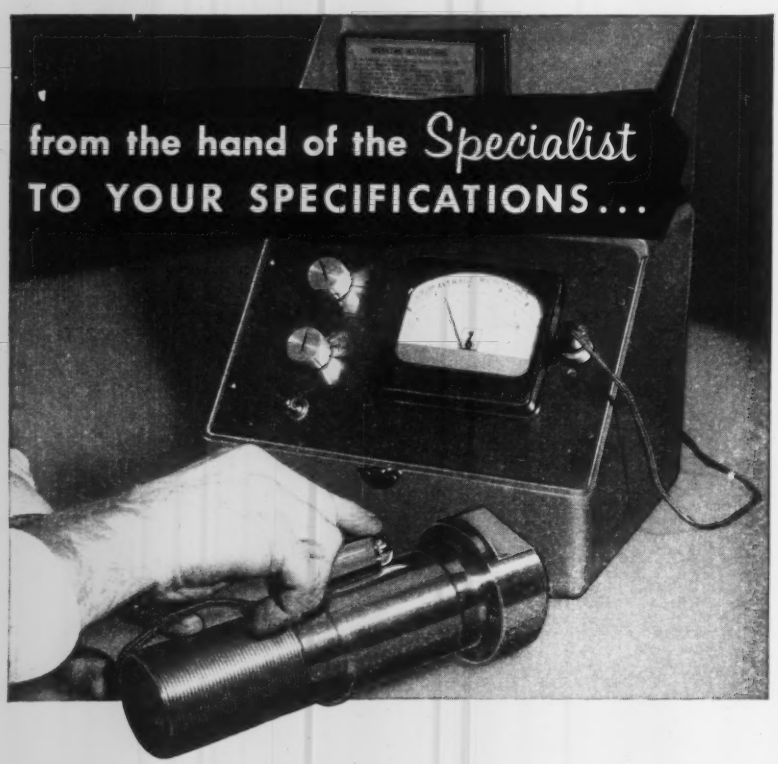
Sheet & Strip Prices, Pages 146 & 147

Automotive sheet and strip orders are heavier, but they're not as large as had been expected. Reason: Production delays (around two weeks) caused by strikes at local auto plants.

The sheetmakers are engaged at higher levels. September shipments were 17 to 20 per cent better than August's, and October volume will be still larger. Some producers think fourth quarter shipments will top third quarter's by 10 to 20 per cent.

Few Holdups — Despite local strikes, autobuilders have issued few shipment holdups. This means they are building up their inventories modestly in preparation for active production schedules once their labor troubles are ironed out. Expectations are automotive tonnage requirements will jump sharply before fourth quarter ends if new car sales measure up to market analysts' hopes.

There has been an encouraging spurt in demand from other areas of consumption, notably appliance manufacture. The appliance makers have boosted their orders noticeably. Refrigerator, freezer, and washing machine manufacturers are buying



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Better Shipments — "Our shipments to the appliance industry were about 15 per cent better in September than they were in August," says a Pittsburgh sheetmaker. "We're currently doing about the same volume of business as we did last year, but a year ago we were going downhill. We expect the appliance people will gear their steel purchases pretty much to retail sales."

There is some forward buying. November bookings at some points are about on a par with October volume. But few consumers are building inventories to former levels. They want to keep yearend stocks down for tax purposes.

Deliveries are lengthening. One midwestern mill can't take any more cold-rolled or galvanized sheet orders for delivery before November. A St. Louis area producer has placed galvanized sheets under allocation with demand greater than it can satisfy. In general, deliveries on hot-rolled sheets range three to four weeks, on cold-rolled, five to six weeks.

Plates . . .

Plate Prices, Page 145

While plate demand remains spotty, and there is little change in over-all volume, shipwork, building and bridge construction requirements continue fairly brisk. Railroad equipment and industrial machinery needs are developing slowly.

Most New England plate shops have reduced their inventories to a low point (except for some tankmakers), and plate buying is picking up slowly in the area. Prompt shipments are a deterrent to heavy forward buying, consumers holding off orders until estimated contracts are confirmed.

"September bookings weren't up to expectations," a Pittsburgh mill reports, "but October entries are reasonably good. With a little luck, we'll do as well as we did in August, which was second only to June."

District producers think November will bring continued modest improvement. One mill is anticipating a 5 per cent gain.

Deliveries of sheared carbon plates average two to three weeks, strip plates around three weeks, and universal plates about two weeks. Inland Steel Co.'s rolling schedule shows it can ship universal mill plates in two weeks against one to two weeks formerly; safety plates and 76-in. mill plates, three to four weeks; and 100-in. mill plates, two to three weeks.

Seattle has opened bids for a Cedar River pipeline replacement, involving 450 tons of plates. Union Oil Co. of California is building a major terminal and storage plant at Ketchikan, Alaska, and Chicago Bridge & Iron Co., Los Angeles, is reported fabricating several tanks for the project.

Wire . . .

Wire Prices, Pages 147 & 148

Some consumers are grumbling over recent advances in wire and wire product prices. Many users are skeptical of being able to pass along the higher costs to their customers, notably on some types of screws and springs.

Generally, October is expected to

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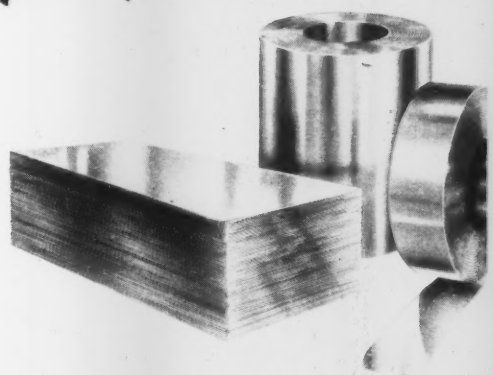

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SPECIFICATIONS

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SHEETS	up to 36"	.005 to .109
	up to 48"	.010 to .109
STRIP	up to 23 15/16"	.0015 to .009
GRADES:	301, 302, 304, 305, 309, 310, 316, 321, 347, 403, 410, 430 and Micro-Mach (special extra-high-tensile aircraft grade)	

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prove the best volume month this year in many wire items. Increased buying is attributed to low consumer inventories and increased demand for fabricated wire goods. Precision spring orders are heavier, but are subject to sharp competition, particularly for automotive assembly.

Tin Plate . . .

Tin Plate Prices, Page 147

"If it weren't for a shortage of processed steel, we could operate our tinning lines at capacity for the next few weeks," a Pittsburgh district producer says. "We've had to turn down business because of our inability to promise shipment before Nov. 1, when prices go up."

The story is the same elsewhere. In the East, inquiry is reported off because consumers are unable to get tonnage in mill schedules for delivery before Nov. 1. That's the situation in the Midwest also.

October is certain to be a big shipping month. By the end of the month, tin plate makers' stocks will be pretty well thinned out. Releases from the warehouses are heavy, and mill shipments will probably equal, or exceed, those of the best previous month this year. A sharp drop is expected next month.

Another step in the modernization of the Fairfield tin mill of U. S. Steel's Tennessee Coal & Iron Div. at Birmingham, gets underway soon with installation of a 54-in. pickling line (see Page 77).

Rails, Car . . .

Track Material Prices, Page 148

Railroads can obtain rebuilt passenger cars at one-third the cost of new equipment under a program inaugurated by Pullman-Standard Car Mfg. Co. Already 25 such cars have been delivered to Chicago & North Western Railway.

Pullman-Standard is rebuilding and upgrading obsolete and high maintenance equipment.

Tubular Goods . . .

Tubular Goods Prices, Page 149

Producers of mechanical tubing report a substantial improvement in sales. Automotive buying is chiefly responsible. The auto builders are moving toward a 30-day inventory position. Instead of placing orders every two weeks, they're now buying month to month.

One mill's September shipments exceeded August's by 15 to 20 per cent. Little additional improvement is expected during October and November, but sales executives won't complain if business holds at the current level.

Demand from farm implement manufacturers is also on the upgrade. Warehouse purchases remain sluggish, and little pickup is expected before the first quarter of 1959.

Sustained by boiler manufacturers' requirements, pressure tubing sales have shown little change in recent weeks. It's feared the boilermakers will be ordering fewer tubes in 1959.

September orders of some sellers for buttweld pipe were off about 10 per cent from August volume. However, demand for standard pipe and miscellaneous tubular items is considered fair. The movement of oil country goods has been a little better, but suppliers in the Southwest still hold large stocks.

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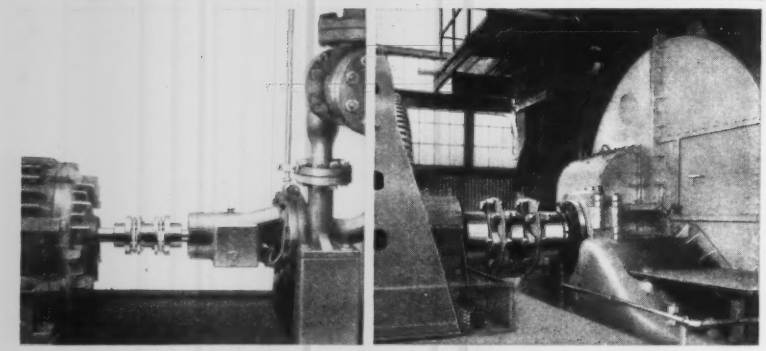

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Structural Shapes . . .

Structural Shape Prices, Page 145

Little new activity is reported in the structural steel market. Fabricators' backlogs are holding up fairly well, except for the small shops which have scarcely any at all. Seasonal slackening in construction is expected over the next couple months, but demand is seen holding steady, especially for wide flange beams.

In New England, fabricators are tonnage minded and are estimating work they would not consider a year ago. This is especially noticeable in the competition for small bridges, on which bids are low. Commercial and industrial building is slow in the area, but educational construction work is holding up, taking a considerable tonnage of bar joists and bars.

Shipments of standard and wide flange structurals are a little more extended in some cases than they were some time ago, but they still run two to four weeks on the average, depending on rolling cycles.

The Washington State Highway Department is preparing plans for a proposed four-lane, high level Columbia River bridge to replace the present span at Vantage, Wash. The cost of the proposed structure is estimated at $16 million. Bids will be taken next year, with construction scheduled to start in 1960.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

4700 tons, Ft. Duquesne Bridge, Pittsburgh, to American Bridge Div., U. S. Steel Corp., Pittsburgh; also, 515 tons of reinforcing bars.

850 tons, reconstruction of superstructure, 35th Street pier, Brooklyn, N. Y., through Triton Construction Co., general contractor, to Lehigh Structural Steel Co., Allentown, Pa.

440 tons, steel angles, medium black, General Stores Supply Office, Navy, Philadelphia, to Phoenix Iron & Steel Co., Phoenixville, Pa.

400 tons, office building, Pepsi-Cola Co., 500 Park Ave., New York, through George A. Fuller Co., general contractor to Dreier Structural Steel Co. Inc., Long Island City, N. Y.

350 tons, apartment, W. 12th St., New York, through Waller Construction Co., general contractor, to Dreier Structural Steel Co. Inc., Long Island City, N. Y.

285 tons, factory building, Edwin J. Schoettle Inc., Bucks County, Pennsylvania, to an unnamed fabricator.

260 tons, structure, Warfordburg, Pa., to Maryland Machine & Foundry Co.

240 tons, state bridge, Berks County, Pennsylvania, to High Welding Co., Lancaster, Pa.

200 tons, two schedules, emergency gates for the Howard A. Hanson Dam, formerly Eagle Gorge, to Philips & Davies Inc., Kenton, Ohio, $119,500 by the U. S. Engineer, Seattle.

200 tons, federal penitentiary, Lewisburg, Pa., through S. H. Evert, Bloomsburg, Pa., gen-

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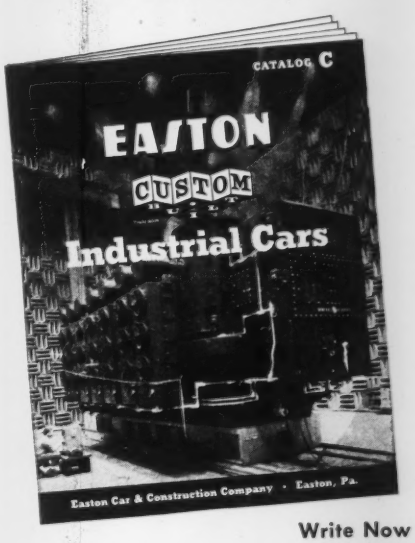

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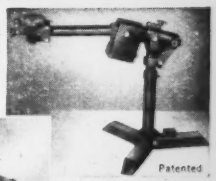
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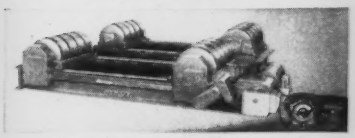

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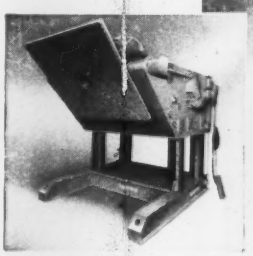

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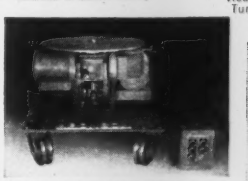

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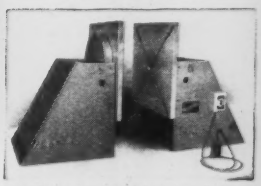

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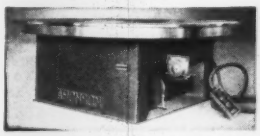

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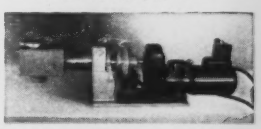

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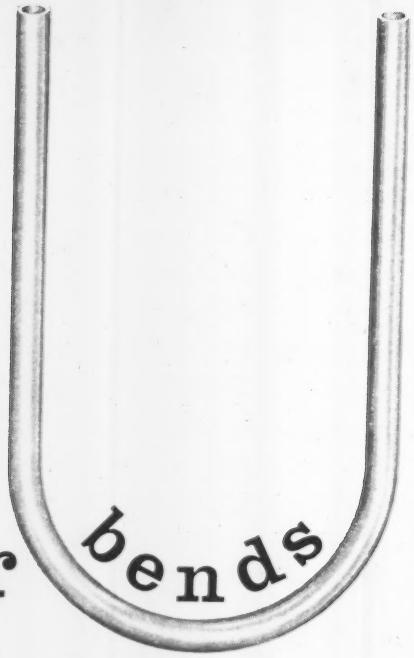

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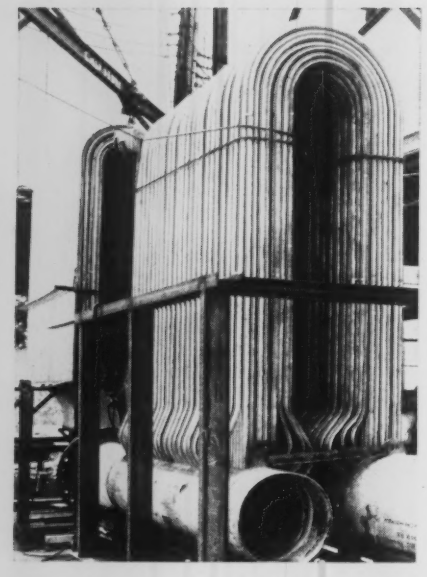


Conventional stainless steel tubing couldn't do the job. Six miles of tubing was needed, 1600 U-bends for a four-stage heat exchanger that raises 560 pounds of air from 350° to 700° F *each second.* The exchanger, one of the largest ever built, is being used in a gas-turbine aircraft engine test program.

The problems were carbide precipitation and loss of corrosion resistance due to the operating temperature. The problems were eliminated easily . . . with Carpenter Type 321 welded and cold drawn stainless tubing stabilized with titanium.

When something extra in uniformity, economy and low-cost service is needed, you'll benefit by contacting the Carpenter distributor or representative in your area. For complete data on the many analyses of Welded Stainless Tubing and Pipe available from distributor stocks or our mill, write for Bulletin T.D. 120 on your company letterhead. The Carpenter Steel Company, Alloy Tube Division, Union, N. J.—The House of Corrosion Control.

Export Dept.: The Carpenter Steel Co., Port Washington, N.Y.—"CARSTEELCO"

your master key to cost-saving corrosion control

stainless tubing & pipe

eral contractor, to Dauphin Steel & Engineering Co., Harrisburg, Pa.

120 tons, alterations, Jewish Agency Building, 515 Park Ave., New York, through Marden Construction Co., general contractor, to Dreier Structural Steel Co. Inc., Long Island City, N. Y.

STRUCTURAL STEEL PENDING

6400 tons, east and west approach spans, contract No. 6, Woodrow Wilson Bridge, Potomac River, Alexandria, Va.; Prince Georges County, Maryland, bids in Oct. 10, regional engineer, Bureau of Public Roads, Arlington, Va.

2260 tons, including 85 tons, bridge bearings, American Rapids Bridge and approaches, Niagara Falls, N. Y., contract No. N-15; bids Oct. 30, Power Authority, State of New York, New York; also, 120 tons, reinforcing bars.

1020 tons, angles and channels, General Stores Supply Office, Navy, Philadelphia; bids Oct. 20, two contracts.

1000 tons, state bridgework, Lackawanna County, Pennsylvania, to Lane Construction Co., Meriden, Conn., general contractor.

350 tons, wide flange, General Stores Supply Office, Navy, Philadelphia; bids Oct. 24; also 90 tons of I-beams, Oct. 21.

230 tons, Niagara Parkway structures, Sec. 1, Niagara Falls-Goat Island, Niagara contract No. N-18; bids Oct. 16, Power Authority, State of New York, New York; also 250 tons, reinforcing bars.

120 tons, including bars, two-span rolled beam bridge, Derby, Conn.; bids in.

Unstated, Oregon state highway underpasses and structures, Linn County; general contract to Hamilton & Thomas Inc., Eugene, Oreg., low at $641,495.

Unstated, Oregon state highway overcrossing, etc., Multnomah County; general contract to Hannan Bros., Portland, Oreg., low at $407,386.

REINFORCING BARS . . .

REINFORCING BARS PLACED

80 tons, Seattle clinic building, to Soule Steel Co., Seattle.

75 tons, University Enterprise Motel, Seattle, to Northwest Steel Rolling Mills Inc., Seattle.

REINFORCING BARS PENDING

Unstated, Oregon state highway bids, low: Clackamas County, 144-ft span, Inland Construction Co., Milwaukee, $38,360; Josephine County, two concrete spans, 151 ft long, Tom Lillebo, Reedsport, Oreg., $669,093; Malheur County, two deck girder bridges, Clarence Braden, Pasco, Wash., $792,571; Washington County, 236-ft underpass, R. L. Martin, Oswego, $92,614.

PIPE . . .

CAST IRON PIPE PLACED

68 tons, 10 in., for Renton, Wash., to Pacific States Cast Iron Pipe Co., Seattle.

RAILS, CARS . . .

RAILROAD CARS PLACED

Union Pacific, 100 flat cars designed for hauling highway trailer vans; 50 to ACF Industries Inc., New York, and 50 to Pullman-Standard Car Mfg. Co., Chicago.

Southern Peru Copper Co., 85 ore cars, to Baldwin-Lima-Hamilton Corp., Eddystone, Pa.

Inland Steel Co., Chicago, 100 gondolas for in-plant use at Indiana Harbor Works, to General American Transportation Corp., Chicago (to be built at East Chicago, Ind., plant).

RAILROAD CARS PENDING

Bureau of Mines, Amarillo, Tex., 20 tank cars, compressed helium transportation; bids Oct. 27.

PLATES . . .

PLATES PLACED

1000 tons or more, 13 penstocks, Niagara power project, NP-22, New York to Chicago

Iron Ore Statistics—August, 1958

(Gross tons)

Stocks at:	U. S. Ores L. Superior	U. S. Ores Other	Canadian Ores L. Superior	Canadian Ores Other	Foreign Ores	Total
U. S. Furnaces						
Eastern	5,043,754	150,284	247,578	1,848,541	4,314,937	11,605,094
Pitts.-Youngstown	11,310,854	48,410	621,767	2,406,295	3,787,648	18,174,974
Cleve.-Detroit	9,644,375	118,107	235,064	334,479	391,430	10,723,455
Chicago	12,577,736	(a)	(a)	.....	(a)	12,577,736
Southern	(a)	2,412,711	.....	(a)	1,757,383	4,170,094
Western	.....	823,816	.....	.....	.....	823,816
Total	38,576,719	3,553,328	1,104,409	4,589,315	10,251,398	58,075,169
At U. S. Docks:						
Lake Erie	4,239,301	.....	91,193	1,068,174	.....	5,398,668
Other	.....	.....	.....	(a)	(a)	(a)
Total U. S. stocks	42,816,020	3,553,328	1,195,602	5,657,489	10,251,398	63,473,837
Total Canadian	2,068,218	.....	148,255	570,575	113,903	2,900,951
Total U. S. & Canada	44,884,238	3,553,328	1,343,857	6,228,064	10,365,301	66,374,788

CONSUMPTION OF IRON ORE—AUGUST, 1958

In U. S. Districts:	U. S. Ores L. Superior	U. S. Ores Other	Canadian Ores L. Superior	Canadian Ores Other	Foreign Ores	Total
Eastern	406,948	123,679	26,253	252,118	665,971	1,474,969
Pitts.-Youngstown	1,476,995	84,179	51,999	339,126	311,306	2,263,605
Cleve.-Detroit	871,260	38,784	44,153	50,970	71,683	1,076,850
Chicago	1,581,039	(a)	(a)	.....	(a)	1,581,039
Southern	(a)	333,860	.....	.....	214,208	548,068
Western	.....	474,101	.....	.....	.....	474,101
In U. S.:						
Blast furnaces	3,636,020	718,889	105,835	335,451	458,729	5,254,924
Steel furnaces	137,061	53,539	12,826	16,017	364,048	583,491
Sintering plants (1)	563,161	280,897	3,744	290,746	440,345	1,578,893
Miscellaneous (2)	.....	1,278	.....	.....	46	1,324
Total U. S.	4,336,242	1,054,603	122,405	642,214	1,263,168	7,418,632
In Canada:						
Blast furnaces	160,829	.....	42,734	43,549	.....	247,112
Steel furnaces	5,034	.....	.....	5,437	9,120	19,591
Sintering (1)	29,330	.....	9,135	25,187	.....	63,652
Miscellaneous (2)	.....	.....	.....	.....	.....	.....
Total Canada	195,193	.....	51,869	74,173	9,120	330,355
Total U. S. & Canada	4,531,435	1,054,603	174,274	716,387	1,272,288	7,748,987

1—Iron ore and ore concentrates consumed in sintering plants not located at mine site.
2—Sold to nonreporting companies or used for purposes not listed.
a—Small tonnage included in other districts to avoid disclosure.
Data from American Iron Ore Association and American Iron & Steel Institute.

PUNCHES · DIES · RIVET SETS
COMPRESSION RIVETER DIES

Made to highest standard and uniform quality thus insuring maximum service.

Since 1903

Rivet sets—round, square, oblong Punches, and Dies carried in stock.

Write Dept. A for catalog 54 and new stock list.

GEO. F. MARCHANT COMPANY
1420-34 So. ROCKWELL STREET · CHICAGO 8, ILLINOIS

Bridge & Iron Co., Chicago, $10,992,000.

895 tons, medium tensile carbon, hull, General Stores Supply Office, Navy, Philadelphia, to Phoenix Iron & Steel Co., Harrisburg, Pa.

775 tons, medium tensile carbon, hull, General Stores Supply Office, Navy, Philadelphia, to Columbia-Geneva Steel Div., U. S. Steel Corp., Pittsburg, Calif.

130 tons, special treatment, Grade Hy-80, naval shipyard, Portsmouth, N. H., to Lukens Steel Co., Coatesville, Pa.

PLATES PENDING

450 tons, Cedar River water supply line replacement; bids in to Seattle.

420 tons, three flat deck barges, Corps of Engineers, Chicago.

300 tons or more, elevated steel tank; bids in at Portland, Oreg.

225 tons, Grade Hy-80, Navy Purchasing Office, Washington, D. C.; bids Oct. 17.

Issues New Export Prices

New export price bases reflecting evaluation of recent increases in rail transportation rates to North Atlantic seaports in relation to the company's competitive position in export markets, were announced last week by the U. S. Steel Export Co., New York, a division of U. S. Steel Corp.

The following revised export price bases, with freight included to New York, Philadelphia, and Baltimore, were made effective with shipments from producing mills Oct. 2:

CARBON STEELS	Per net ton
Billets, blooms, and slabs	
Rerolling quality	$ 88.74
Forging quality	108.24
Tube rounds	131.91
Standard rails—61 lb and over	119.28
Light rails —60 lb and under	143.28
	Per 100 lb
Joint bars for standard rails	$7.50
Tie plates	7.13
H.R. bars, merchant quality	6.15
H.R. bars, special quality	6.50
Plates	5.81
Floor plates	6.89
Sheet piling	7.01
Concrete reinforcing bars	5.82
Cold finished bars	8.16
H.R. sheets—18 gage & heavier	5.24
C.R. sheets	6.42
Galvanized sheets	7.02
Vitrenamel sheets, 12 gage	7.29
Electrical sheets, H.R. Cut lengths, 22 gage	
Electrical grade	12.91
Tight cooperage hoop	6.08
Wire Products	
Wire rods	6.63
Bright nail wire	8.24
Black annealed wire	9.09
Galvanized plain wire	9.77
	Per 80 rod spool
Barbed wire	
Lyman 4 pt. 5 in.	$8.85
	Per 100 lb
Glidden 4 pt. 3 or 6 in.	$10.19
Iowa 4 pt. 3 or 6 in.	10.19
Waukegan 4 pt. 3 or 6 in.	10.29
Nails (bright)	9.21
Staples (galvanized)	9.41

TIN MILL PRODUCTS

(107 # basis weight—14 x 20 in.—112 sheets—Multiple package metal containers)

USS common coke tin plate (1.25 # coating) Superdraw $10.75 base box

USS Ferrostan 25 Superdraw (0.25 # coating)—Electrolytic 9.39 base box

USS special coated manufacturing terne plate Superdraw 10.34 base box

USS Black plate—Superdraw 8.49 base box

American standard pipe T & C

Random lengths		
Buttweld		
Black		
2½ and 3 in.	Minus	10.35 discount
3½ and 4 in.	Plus	0.15 discount
Buttweld		
Galvanized		
2½ and 3 in.	Plus	5.90 discount
3½ and 4 in.	Plus	16.90 discount
Seamless		
Black		
2 in.	Plus	17.35 discount
2½ in.	Plus	10.85 discount
3 in.	Plus	8.35 discount
3½ and 4 in.	Plus	6.85 discount
5 in.	Plus	5.40 discount
6 in.	Plus	2.90 discount
Seamless		
Galvanized		
2 in.	Plus	32.35 discount
2½ in.	Plus	27.60 discount
3 in.	Plus	25.10 discount
3½ and 4 in.	Plus	23.60 discount
5 in.	Plus	22.15 discount
6 in.	Plus	19.65 discount

ALLOY STEELS	Per 100 lb
H.R. bars	$6.97
H.R. bar shapes	7.31
Plates	8.01
Standard structural shapes	7.31
H.R. strip	8.91
Cold finished bars	9.27
HIGH STRENGTH STEELS	
Cor-Ten	
Plates	$8.46
Standard structural shapes	8.56
C.B. sections	8.56
H.R. bars	8.54
H.R. bar shapes	8.77
Galvanized sheets	10.27
Man-Ten "H"	
Plates	$7.11
Standard structural shapes	7.26
C.B. sections	7.26
H.R. bars	7.17
H.R. bar shapes	7.40
H.R. strip	6.80
Abrasion Resisting Steel	
Plates	$7.56
H.R. bars & bar shapes	8.06
H.R. strip	7.43
H.R. sheets	7.39

Semifinished Steel . . .

Semifinished Prices, Page 145

Better demand has pushed steelmaking operations to the highest level since last fall. Last week the national ingot rate jumped 3 percentage points to 71.5 per cent of capacity. That's equal to weekly output of 1,930,000 net tons of ingots and steel for castings.

The improvement in operations is fairly general. Most steelmaking centers reported increases. Steelmakers are operating their larger and more efficient furnaces, and indications are the fourth quarter will prove the best of the year volumewise.

Reflecting the better open hearth operations, more blast furnaces are being blown in as hot metal requirements rise.

National Tube Div., U. S. Steel Corp., recalled about 350 workers last week following reactivation of a blast furnace which has been down since the end of last year. The addition puts four of the plant's five stacks in production. The furnace was reactivated to provide hot metal for the open hearths which are under increased pressure for raw steel.

DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

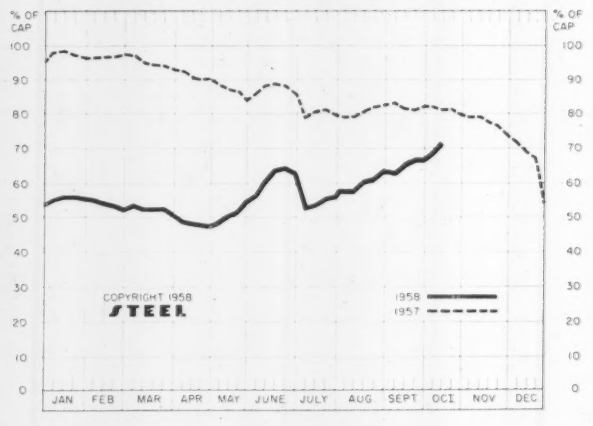
	Week Ended Oct. 12	Change	Same Week 1957	Same Week 1956
Pittsburgh	65	0*	84	100
Chicago	82.5	+ 4*	86	101.5
Eastern	68	+ 2	84.5	100.5
Youngstown	55	+ 1	70	101
Wheeling	82	+ 7	82	104
Cleveland	78.5	+ 4.5*	86.5	103.5
Buffalo	66	+ 7.5	100	107.5
Birmingham	65.5	+ 3.5*	70.5	95.5
Cincinnati	76	+ 1*	77.5	95
St. Louis	88	— 3	82.5	106
Detroit	78	— 0.5*	102	101
Western	75	0	94	103
National Rate	71.5	+ 3	81	102

INGOT PRODUCTION‡

	Week Ended Oct. 12	Week Ago	Month Ago	Year Ago
INDEX (1947-49=100)	119.4†	118.3	110.8	131.0
NET TONS (In thousands)	1,918†	1,901	1,780	2,105

*Change from preceding week's revised rate. †Estimated. ‡American Iron & Steel Institute. Weekly capacity (net tons): 2,699,173 in 1958; 2,559,490 in 1957; 2,461,893 in 1956.

NATIONAL STEELWORKS OPERATIONS



Price Indexes and Composites

Oct. 7, 1958	Week Ago	Month Ago	Sept. Avg	Year Ago
186.7	186.6	186.6	186.6	181.7

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Oct. 7

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	$5.825	Bars, Reinforcing	6.385
Rails, Light, 40 lb	7.292	Bars, C.F., Carbon	10.710
Tie Plates	6.783	Bars, C.F., Alloy	14.125
Axles, Railway	10.175	Bars, C.F., Stainless, 302 (lb)	0.553
Wheels, Freight Car, 33 in. (per wheel)	62.000	Sheets, H.R., Carbon	6.350
Plates, Carbon	6.350	Sheets, C.R., Carbon	7.300
Structural Shapes	6.167	Sheets, Galvanized	8.615
Bars, Tool Steel, Carbon (lb)	0.560	Sheets, C.R., Stainless, 302 (lb)	0.688
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.680	Sheets, Electrical	12.625
Bars, Tool Steel, H.R., Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.060 (lb)	1.400	Strip, C.R., Carbon	9.489
Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.895	Strip, C.R., Stainless, 430 (lb)	0.493
Bars, H.R., Alloy	10.775	Strip, H.R., Carbon	6.250
Bars, H.R., Stainless, 303 (lb)	0.525	Pipe, Black, Buttweld (100 ft)	20.525
Bars, H.R., Carbon	6.675	Pipe, Galv., Buttweld (100 ft)	23.975
		Pipe, Line (100 ft)	205.710
		Casing, Oil Well, Carbon (100 ft)	201.080
		Casing, Oil Well, Alloy (100 ft)	315.213
Tubes, Boiler (100 ft)	51.200	Black Plate, Canmaking Quality (95 lb base box)	7.583
Tubing, Mechanical, Carbon (100 ft)	26.157	Wire, Drawn, Carbon	10.575
Tubing, Mechanical, Stainless, 304 (100 ft)	205.608	Wire, Drawn, Stainless, 430 (lb)	0.653
Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	9.783	Bale Ties (bundles)	7.967
Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.483	Nails, Wire, 8d Common	9.828
		Wire, Barbed (80-rod spool)	8.719
		Woven Wire Fence (20-rod roll)	21.737

STEEL's FINISHED STEEL PRICE INDEX*

	Oct. 8 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)	246.65	246.65	246.65	239.15	189.38
Index in cents per lb	6.682	6.682	6.682	6.479	5.130

STEEL's ARITHMETICAL PRICE COMPOSITES*

Finished Steel, NT	$149.28	$149.28	$149.28	$146.03	$115.54
No. 2 Fdry Pig Iron, GT	66.49	66.49	66.49	66.49	56.54
Basic Pig Iron, GT	65.99	65.99	65.99	65.99	56.04
Malleable Pig Iron, GT	67.27	67.27	67.27	67.27	57.27
Steelmaking Scrap, GT	42.33	43.00	42.67	39.50	31.83

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	Oct. 8 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.675	5.675	5.675	5.425	4.15
Bars, H.R., Chicago	5.675	5.675	5.675	5.425	4.15
Bars, H.R., deld. Philadelphia	5.975	5.975	5.975	5.725	5.302
Bars, C.F., Pittsburgh	7.65*	7.65*	7.65*	7.30*	5.20
Shapes, Std., Pittsburgh	5.50	5.50	5.50	5.275	4.10
Shapes, Std., Chicago	5.50	5.50	5.50	5.275	4.10
Shapes, deld., Philadelphia	5.77	5.77	5.77	5.545	4.38
Plates, Pittsburgh	5.30	5.30	5.30	5.10	4.10
Plates, Chicago	5.30	5.30	5.30	5.10	4.10
Plates, Coatesville, Pa.	5.30	5.30	5.30	5.10	4.35
Plates, Sparrows Point, Md.	5.30	5.30	5.30	5.10	4.10
Plates, Claymont, Del.	5.30	5.30	5.30	5.70	4.55
Sheets, H.R., Pittsburgh	5.10	5.10	5.10	4.925	3.925
Sheets, H.R., Chicago	5.10	5.10	5.10	4.925	3.925
Sheets, C.R., Pittsburgh	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Chicago	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Detroit	6.275	6.275	6.275	6.05-6.15	4.975
Sheets, Galv., Pittsburgh	6.875	6.875	6.875	6.60	5.275
Strip, H.R., Pittsburgh	5.10	5.10	5.10	4.925	3.975-4.425
Strip, H.R., Chicago	5.10	5.10	5.10	4.925	3.925
Strip, C.R., Pittsburgh	7.425	7.425	7.425	7.15	5.45-5.95
Strip, C.R., Chicago	7.425	7.425	7.425	7.15	5.70
Strip, C.R., Detroit	7.425	7.425	7.425	7.25	5.45-6.05
Wire, Basic, Pittsburgh	8.00	8.00	8.00	7.65	5.475-5.525
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.95	6.35-6.55
Tin plate (1.50 lb) box, Pitts.	$10.30	$10.30	$10.30	$10.30	$8.95

*Including 0.35c for special quality.

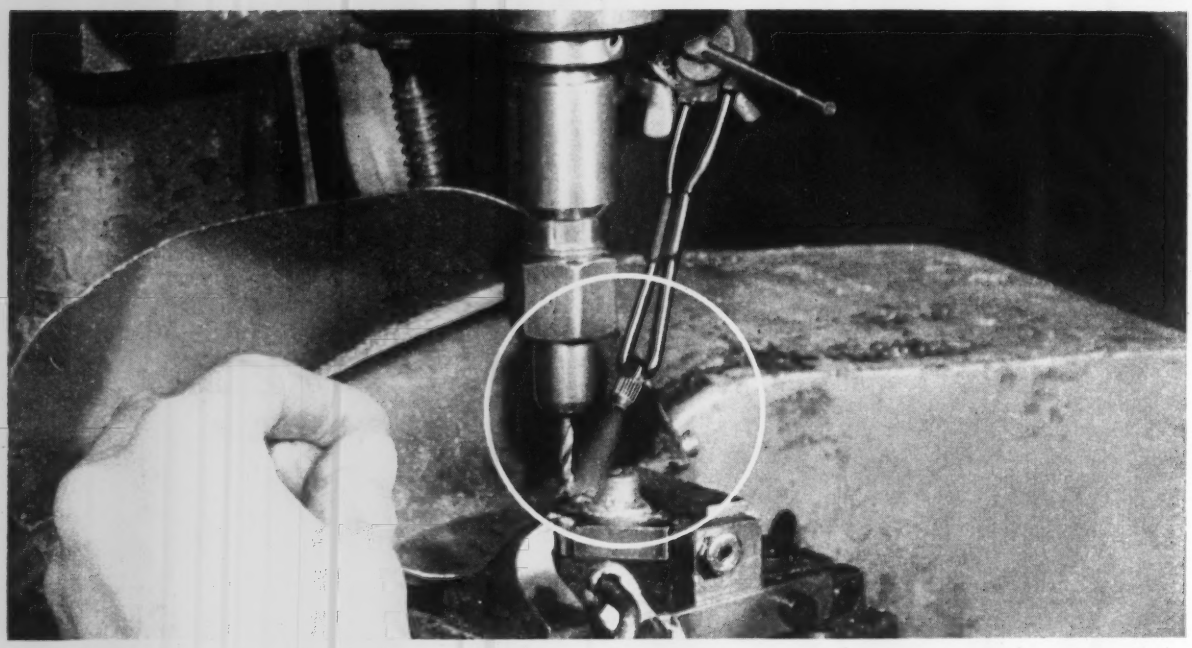
SEMIFINISHED STEEL					
Billets, forging, Pitts. (NT)	$99.50	$99.50	$99.50	$96.00	$75.50
Wire rods $\frac{7}{32}$-$\frac{5}{8}$" Pitts.	6.40	6.40	6.40	6.15	4.525

PIG IRON, Gross Ton	Oct. 8 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pitts.	$67.00	$67.00	$67.00	$67.00	$57.00
Basic, Valley	66.00	66.00	66.00	66.00	56.00
Basic, deld., Phila.	70.41	70.41	70.41	70.01	60.75
No. 2 Fdry, Neville Island, Pa.	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, Chicago	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, deld., Phila.	70.91	70.91	70.91	70.51	61.25
No. 2 Fdry, Birm.	62.50	62.50	62.50	62.50	52.88
No. 2 Fdry (Birm.) deld. Cin	70.20	70.20	70.20	70.20	60.43
Malleable, Valley	66.50	66.50	66.50	66.50	56.50
Malleable, Chicago	66.50	66.50	66.50	66.50	56.50
Ferromanganese, net ton†	245.00	245.00	245.00	245.00	200.00

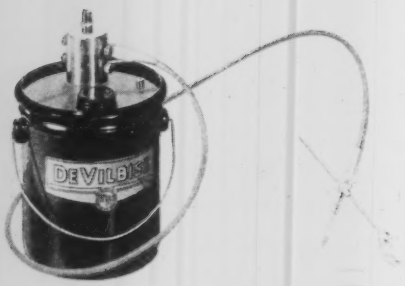
†74-76% Mn, Duquesne, Pa. *Etna, Pa.

SCRAP, Gross Ton (Including broker's commission)					
No. 1 Heavy Melt, Pittsburgh	$43.50	$43.50	$42.50	$40.50	$34.50
No. 1 Heavy Melt, E. Pa.	42.00	42.00	40.00	38.50	31.50
No. 1 Heavy Melt, Chicago	41.50	43.50	45.50	39.50	29.50
No. 1 Heavy Melt, Valley	43.50	43.50	43.50	38.50	33.50
No. 1 Heavy Melt, Cleve.	40.00	40.00	40.00	36.50	30.50
No. 1 Heavy Melt, Buffalo	35.50	34.50	34.50	38.50	33.50
Rails, Rerolling, Chicago	63.50	64.50	65.50	57.50	42.50
No. 1 Cast, Chicago	43.50	46.50	46.50	38.50	32.50

COKE, Net Ton					
Beehive, Furn., Connlsvl.	$15.25	$15.25	$15.25	$15.25	$14.75
Beehive, Fdry., Connlsvl.	18.25	18.25	18.25	18.25	16.75
Oven, Fdry., Milwaukee	30.50	30.50	30.50	30.50	25.25



$40 Multi-Mister doubles tool life —holds closer tolerances!



Multi-Misters available with one or five gallon tanks, one to four nozzles. All models complete and ready for installation.

When overheated drill becomes oversized, "run-out" occurs and thin walls buckle. Mist-cooled drill cuts a perfect hole.

Cooled and lubricated by fine spray mist, tools cut better; last longer!

Heat—the principal cause of short life for forming and cutting tools—can now be effectively controlled on many of your toughest jobs with Multi-Mister—DeVilbiss' new mist-cooling development.

DeVilbiss' Multi-Mister directs a chilling blast of air and coolant to keep temperatures down two ways: (1) the jet of expanding air dissipates tool heat instantly, and (2) the mist lubricates cutting edges to reduce friction.

The results: longer tool life, finer surface finishes, closer dimensional tolerances, fewer shutdowns to sharpen and reset tools.

A call to your DeVilbiss representative will supply you with even further advantages of mist cooling, plus a free demonstration of Multi-Mister on your own machines! Call him today; or write us direct for Multi-Mister Bulletin BC 1025.

THE DEVILBISS COMPANY
Toledo 1, Ohio

Barrie, Ontario • London, England
Branch Offices in Principal Cities

FOR BETTER SERVICE, BUY
DEVILBISS

Steel Prices

Mill prices as reported to STEEL. Oct. 8, cents per pound except as otherwise noted. *Changes shown in italics.* Code number following mill points indicates producing company. Key to producers, page 146; footnotes, page 148.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall,Pa. U5 ....$76.00

INGOTS, Alloy (NT)
Detroit S41 ....$82.00
Economy,Pa. B14 ....82.00
Farrell,Pa. S3 ....82.00
Lowellville,O. S3 ....82.00
Midland,Pa. C18 ....82.00
Munhall,Pa. U5 ....82.00
Sharon,Pa. S3 ....82.00

BILLETS, BLOOMS & SLABS
Carbon,Rerolling (NT)
Bartonville,Ill. K4 ....$82.00
Bessemer,Pa. U5 ....80.00
Buffalo R2 ....80.00
Clairton,Pa. U5 ....80.00
Ensley,Ala. T2 ....80.00
Fairfield,Ala. T2 ....80.00
Fontana,Calif. K1 ....90.50
Gary,Ind. U5 ....80.00
Johnstown,Pa. B3 ....80.00
Lackawanna,N.Y. B2 ..80.00
Munhall,Pa. U5 ....80.00
Owensboro,Ky. G8 ....77.50
S.Chicago,Ill. R2, U5 ..80.00
S.Duquesne,Pa. U5 ....80.00
Sterling,Ill. N15 ....80.00
Youngstown R2 ....80.00

Carbon, Forging (NT)
Bessemer,Pa. N5 ....$99.50
Buffalo R2 ....99.50
Canton,O. R2 ....102.00
Clairton,Pa. U5 ....99.50
Conshohocken,Pa. A3 ..104.50
Ensley,Ala. T2 ....99.50
Fairfield,Ala. T2 ....99.50
Farrell,Pa. S3 ....99.50
Fontana,Calif. K1 ....109.00
Gary,Ind. U5 ....99.50
Geneva,Utah C11 ....99.50
Houston S5 ....104.50
Johnstown,Pa. B2 ....99.50
Lackawanna,N.Y. B2 ..99.50
LosAngeles B3 ....109.00
Midland,Pa. C18 ....99.50
Munhall,Pa. U5 ....99.50
Owensboro,Ky. C8 ....96.00
Seattle B3 ....113.00
Sharon,Pa. S3 ....99.50
S.Chicago R2, U5, W14 99.50
S.Duquesne,Pa. U5 ....99.50
S.SanFrancisco B3 ..109.00
Warren,O. C17 ....99.50

Alloy, Forging (NT)
Bethlehem,Pa. R2 ....$119.00
Bridgeport,Conn. C32 .119.00
Buffalo R2 ....119.00
Canton,O. R2, T7 ....119.00
Conshohocken,Pa. A3 ..126.00
Detroit S41 ....119.00
Economy,Pa. B14 ....119.00
Farrell,Pa. S3 ....119.00
Fontana,Calif. K1 ....140.00
Gary,Ind. U5 ....119.00
Houston S5 ....124.00
Ind.Harbor,Ind. Y1 ...119.00
Johnstown,Pa. B2 ....119.00
Lackawanna,N.Y. B2 ..119.00
LosAngeles B3 ....139.00
Owensboro,Ky. G8 ....114.00
Lowellville,O. S3 ....119.00
Massillon,O. R2 ....119.00
Midland,Pa. C18 ....119.00
Munhall,Pa. U5 ....119.00
Sharon,Pa. S3 ....119.00
S.Chicago R2,U5,W14.119.00
S.Duquesne,Pa. U5 ..119.00
Struthers,O. Y1 ....119.00
Warren,O. C17 ....119.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 ....$122.50
Canton,O. R2 ....125.00
Cleveland R2 ....122.50
Gary,Ind. U5 ....122.50
S.Chicago,Ill R2, W14 122.50
S.Duquesne,Pa. U5 ..122.50
Warren,O. C17 ....122.50

SKELP
Aliquippa,Pa. J5 ....5.05
Munhall,Pa. U5 ....5.05
Pittsburgh J5 ....5.05
Warren,O. R2 ....5.05
Youngstown R2, U5 ....5.05

WIRE RODS
AlabamaCity,Ala R2 ..6.40
Aliquippa,Pa. J5 ....6.40
Alton,Ill. L1 ....6.60
Bartonville,Ill. K4 ....6.50
Buffalo W12 ....6.40
Cleveland A7 ....6.40
Donora,Pa. A7 ....6.40
Fairfield,Ala. T2 ....6.40
Houston S5 ....6.65
IndianaHarbor,Ind. Y1..6.40
Johnstown,Pa. B2 ....6.40
Joliet,Ill. A7 ....6.40
KansasCity,Mo. S5 ....6.65
Kokomo,Ind. C16 ....6.50
LosAngeles B3 ....7.20
Minnequa,Colo. C10 ....6.65
Monessen,Pa. P7 ....6.40
N.Tonawanda,N.Y. B11..6.40
Pittsburg,Calif. C11 ....7.20
Portsmouth,O. P12 ....6.40
Roebling,N.J. R5 ....6.50
S.Chicago,Ill. R2, W14 ..6.40
SparrowsPoint,Md. B2 ..6.50
Sterling,Ill.(1) N15 ....6.40
Sterling,Ill. N15 ....6.50
Struthers,O. Y1 ....6.40
Worcester,Mass. A7 ....6.70

STRUCTURALS

Carbon Steel Std. Shapes
AlabamaCity,Ala. R2 ..5.50
Atlanta A11 ....5.70
Aliquippa,Pa. J5 ....5.50
Bessemer,Ala. T2 ....5.50
Bethlehem,Pa. B2 ....5.55
Birmingham C15 ....5.50
Clairton,Pa. U5 ....5.50
Fairfield,Ala. T2 ....5.50
Fontana,Calif. K1 ....6.30
Gary,Ind. U5 ....5.50
Geneva,Utah C11 ....5.50
Houston S5 ....5.60
Ind.Harbor,Ind. I-2, Y1..5.50
Johnstown,Pa. B2 ....5.55
Joliet,Ill. P22 ....5.50
KansasCity,Mo. S5 ....5.60
Lackawanna,N.Y. B2 ..5.55
LosAngeles B3 ....6.20
Minnequa,Colo. C10 ....5.80
Munhall,Pa. U5 ....5.50
Niles,Calif. P1 ....6.25
Phoenixville,Pa. P4 ....5.55
Portland,Oreg. O4 ....6.25
Seattle B3 ....6.25
S.Chicago,Ill. U5, W14..5.50
S.SanFrancisco B3 ....6.15
Sterling,Ill. N15 ....5.50
Torrance,Calif. C11 ....6.20
Weirton,W.Va. W6 ....5.50

Wide Flange
Bethlehem,Pa. B2 ....5.55
Clairton,Pa. U5 ....5.50
Fontana,Calif. K1 ....6.45
IndianaHarbor,Ind. I-2..5.50
Lackawanna,N.Y. B2 ..5.55
Munhall,Pa. U5 ....5.50
Phoenixville,Pa. P4 ....5.55
S.Chicago,Ill. U5 ....5.50
Weirton,W.Va. W6 ....5.50

Alloy Std. Shapes
Aliquippa,Pa. J5 ....6.80
Clairton,Pa. U5 ....6.80
Gary,Ind. U5 ....6.80
Houston S5 ....6.90
Munhall,Pa. U5 ....6.80
S.Chicago,Ill. U5, W14..6.80

H.S., L.A. Std. Shapes
Aliquippa,Pa. J5 ....8.05
Bessemer,Ala. T2 ....8.05
Bethlehem,Pa. B2 ....8.10
Clairton,Pa. U5 ....8.05
Fairfield,Ala. T2 ....8.05
Fontana,Calif. K1 ....8.85
Gary,Ind. U5 ....8.05
Geneva,Utah C11 ....8.05
Houston S5 ....8.15
Ind.Harbor,Ind. I-2, Y1..8.05
Johnstown,Pa. B2 ....8.10
KansasCity,Mo. S5 ....8.15
Lackawanna,N.Y. B2 ..8.10
LosAngeles B3 ....8.75
Munhall,Pa. U5 ....8.05
Seattle B3 ....8.80
S.Chicago,Ill. U5, W14..8.05
S.SanFrancisco B3 ....8.70
Struthers,O. Y1 ....8.05

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 ....8.10
Ind.Harbor,Ind. I-2 ....8.05
Lackawanna,N.Y. B2 ..8.10
Munhall,Pa. U5 ....8.05
S.Chicago,Ill. U5 ....8.05

PILING

BEARING PILES
Bethlehem,Pa. B2 ....5.55
Ind.Harbor,Ind. I-2 ....5.50
Lackawanna,N.Y. B2 ..5.55
Munhall,Pa. U5 ....5.50
S.Chicago,Ill. I-2, U5 ..5.50

STEEL SHEET PILING
Ind.Harbor,Ind. I-2 ....6.50
Lackawanna,N.Y. B2 ..6.50
Munhall,Pa. U5 ....6.50
S.Chicago,Ill. I-2, U5 ..6.50
Weirton,W.Va. W6 ....6.50

PLATES

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..5.30
Aliquippa,Pa. J5 ....5.30
Ashland,Ky.(15) A10 ..5.30
Atlanta A11 ....5.50
Bessemer,Ala. T2 ....5.30
Clairton,Pa. U5 ....5.30
Claymont,Del. C22 ....5.30
Cleveland J5, R2 ....5.30
Coatesville,Pa. L7 ....5.30
Conshohocken,Pa. A3 ..5.30
Ecorse,Mich. G5 ....5.30
Fairfield,Ala. T2 ....5.30
Farrell,Pa. S3 ....5.30
Fontana,Calif.(30) K1 ..6.10
Gary,Ind. U5 ....5.30
GraniteCity,Ill. G4 ....5.40
Harrisburg,Pa. P4 ....5.30
Houston S5 ....5.40
Ind.Harbor,Ind. I-2, Y1..5.30
Johnstown,Pa. B2 ....5.30
Lackawanna,N.Y. B2 ..5.30
Mansfield,O. E6 ....5.30
Minnequa,Colo. C10 ....6.15
Munhall,Pa. U5 ....5.30
Newport,Ky. A2 ....5.30
Pittsburgh J5 ....5.30
Riverdale,Ill. A1 ....5.30
Seattle B3 ....6.20
Sharon,Pa. S3 ....5.30
S.Chicago,Ill. U5, W14 ..5.30
SparrowsPoint,Md. B2 ..5.30
Sterling,Ill. N15 ....5.30
Steubenville,O. W10 ....5.30
Warren,O. R2 ....5.30
Youngstown U5, Y1 ....5.30
Youngstown(27) R2 ....5.30

PLATES, Carbon Abras. Resist.
Claymont,Del. C22 ....6.75
Fontana,Calif. K1 ....7.85
Geneva,Utah C11 ....7.05
Houston S5 ....7.15
Johnstown,Pa. B2 ....7.05
SparrowsPoint,Md. B2 ..7.05

PLATES, Wrought Iron
Economy,Pa. B14 ....13.15

PLATES, H.S., L.A.
Aliquippa,Pa. J5 ....7.95
Ashland,Ky. A10 ....7.95
Bessemer,Ala. T2 ....7.95
Clairton,Pa. U5 ....7.95
Claymont,Del. C22 ....7.95
Cleveland J5, R2 ....7.95
Coatesville,Pa. L7 ....7.95
Conshohocken,Pa. A3 ..7.95
Economy,Pa. B14 ....7.95
Ecorse,Mich. G5 ....7.95
Fairfield,Ala. T2 ....7.95
Farrell,Pa. S3 ....7.95
Fontana,Calif.(30) K1 ..8.75
Gary,Ind. U5 ....7.95
Geneva,Utah C11 ....7.95
Houston S5 ....8.05
Ind.Harbor,Ind. I-2, Y1..7.95
Johnstown,Pa. B2 ....7.95
Munhall,Pa. U5 ....7.95
Pittsburgh J5 ....7.95
Seattle B3 ....8.85
Sharon,Pa. S3 ....7.95
S.Chicago,Ill. U5, W14..7.95
SparrowsPoint,Md. B2 ..7.95
Warren,O. R2 ....7.95
Youngstown U5, Y1 ....7.95

PLATES, ALLOY
Aliquippa,Pa. J5 ....7.50
Claymont,Del. C22 ....7.50
Coatesville,Pa. L17 ....7.50
Economy,Pa. B14 ....7.50
Farrell,Pa. S3 ....7.50
Fontana,Calif. K1 ....8.30
Gary,Ind. U5 ....7.50
Houston S5 ....7.60
Ind.Harbor,Ind. Y1 ....7.50
Johnstown,Pa. B2 ....7.50
Lowellville,O. S3 ....7.50
Munhall,Pa. U5 ....7.50
Newport,Ky. A2 ....7.50
Pittsburgh J5 ....7.50
Seattle B3 ....8.40
Sharon,Pa. S3 ....7.50
S.Chicago,Ill. U5, W14..7.50
SparrowsPoint,Md. B2 ..7.50
Youngstown Y1 ....7.50

FLOOR PLATES
Cleveland J5 ....6.375
Conshohocken,Pa. A3 ..6.375
Ind.Harbor,Ind. I-2 ....6.375
Munhall,Pa. U5 ....6.375
Pittsburgh J5 ....6.375
S.Chicago,Ill. U5 ....6.375

PLATES, Ingot Iron
Ashland c.l.(15) A10 ..5.55
Ashland l.c.l.(15) A10 ..6.05
Cleveland c.l. R2 ....6.05
Warren,O. c.l. R2 ....6.05

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)
Ala.City,Ala.(9) R2 ..5.675
Aliquippa,Pa.(9) J5 ..5.675
Alton,Ill. L1 ....5.875
Atlanta(9) A11 ....5.875
Bessemer,Ala.(9) T2 ..5.675
Birmingham(9) C15 ..5.675
Buffalo(9) R2 ....5.675
Canton,O.(23) R2 ....6.15
Clairton,Pa.(9) U5 ....5.675
Cleveland(9) R2 ....5.675
Ecorse,Mich.(9) G5 ..5.675
Emeryville,Calif. J7 ..6.425
Fairfield,Ala.(9) T2 ..5.675
Fairless,Pa.(9) U5 ....5.825
Fontana,Calif.(9) K1..6.375
Gary,Ind.(9) U5 ....5.675
Houston(9) S5 ....5.925
Ind.Harbor (9) I-2, Y1 5.675
Johnstown,Pa.(9) B2 ..5.675
Joliet,Ill. P22 ....5.675
KansasCity,Mo. (9) S5..5.925
Lackawanna(9) B2 ....5.675
LosAngeles(9) B3 ....6.375
Massillon,O.(23) R2 ....6.15
Midland,Pa.(23) C18 ..6.025
Milton,Pa. M18 ....5.825
Minnequa,Colo. C10 ....6.125
Niles,Calif. P1 ....6.375
N.Tonawanda,N.Y.(23)B11 6.025
Owensboro,Ky.(9) G8 ..5.425
Pittsburg,Calif.(9) C11..6.375
Pittsburgh(9) J5 ....5.675
Portland,Oreg. O4 ....6.425
Riverdale,Ill.(9) A1 ..5.675
Seattle B3, N14 ....6.425
S.Ch'e'go(9)R2,U5,W14 5.675
S.Duquesne,Pa.(9) U5..5.675
S.SanFran.,Calif.(9) B3 6.425
Sterling,Ill.(1)(9) N15..5.675
Sterling,Ill.(9) N15 ....5.775
Struthers,O.(9) Y1 ....5.675
Tonawanda,N.Y. B12 ..5.675
Torrance,Calif.(9) C11.6.375
Warren,O. C17 ....6.025
Youngstown(9) R2, U5..5.675

BARS, Hot-Rolled Alloy
Aliquippa,Pa. J5 ....6.725
Bethlehem,Pa. B2 ....6.725
Bridgeport,Conn. C32 ..6.80
Buffalo R2 ....6.725
Canton,O. R2, T7 ....6.725
Clairton,Pa. U5 ....6.725
Detroit S41 ....6.725
Economy,Pa. B14 ....6.725
Ecorse,Mich. G5 ....6.725
Fairless,Pa. U5 ....6.875
Farrell,Pa. S3 ....6.725
Fontana,Calif. K1 ....7.775
Gary,Ind. U5 ....6.725
Houston S5 ....6.975
Ind.Harbor,Ind. I-2, Y1..6.725
Johnstown,Pa. B2 ....6.725
KansasCity,Mo. S5 ....6.975
Lackawanna,N.Y. B2 ..6.725
Lowellville,O. S3 ....6.725
LosAngeles B3 ....7.775
Massillon,O. R2 ....6.725
Midland,Pa. C18 ....6.725
Owensboro,Ky. G8 ....6.475
Pittsburgh J5 ....6.725
Sharon,Pa. S3 ....6.725
S.Chicago R2, U5, W14..6.725
S.Duquesne,Pa. U5 ....6.725
Struthers,O. Y1 ....6.725
Warren,O. C17 ....6.725
Youngstown U5 ....6.725

BARS & SMALL SHAPES, H.R. High-Strength, Low-Alloy
Aliquippa,Pa. J5 ....8.30
Bessemer,Ala. T2 ....8.30
Bethlehem,Pa. B2 ....8.30
Clairton,Pa. U5 ....8.30
Cleveland R2 ....8.30
Ecorse,Mich. G5 ....8.30
Fairfield,Ala. T2 ....8.30
Fontana,Calif. K1 ....9.00
Gary,Ind. U5 ....8.30
Houston S5 ....8.55
Ind.Harbor,Ind. Y1 ....8.30
Johnstown,Pa. B2 ....8.30
KansasCity,Mo. S5 ....8.55
Lackawanna,N.Y. B2 ..8.30
LosAngeles B3 ....9.00
Pittsburgh J5 ....8.30
Seattle B3 ....9.05
S.Chicago,Ill. R2, W14..8.30
S.Duquesne,Pa. U5 ....8.30
S.SanFrancisco B3 ....9.05
Struthers,O. Y1 ....8.30
Youngstown U5 ....8.30

BAR SIZE ANGLES; H.R. Carbon
Bethlehem,Pa.(9) B2 ..5.825
Houston(9) S5 ....5.925
KansasCity,Mo.(9) S5..5.925
Lackawanna(9) B2 ....5.675
Sterling,Ill. N15 ....5.775
Sterling,Ill.(1) N15 ..5.675
Tonawanda,N.Y. B12 ..5.675

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 ....5.675
Atlanta A11 ....5.875
Joliet,Ill. P22 ....5.675
Minnequa,Colo. C10 ....6.125
Niles,Calif. P1 ....6.375
Pittsburgh J5 ....5.675
Portland,Oreg. O4 ....6.425
SanFrancisco S7 ....6.52
Seattle B3 ....6.425

BAR SHAPES, Hot-Rolled Alloy
Aliquippa,Pa. J5 ....6.80
Clairton,Pa. U5 ....6.80
Gary,Ind. U5 ....6.80
Houston S5 ....7.05
KansasCity,Mo. S5 ....7.05
Pittsburgh J5 ....6.80
Youngstown U5 ....6.80

BARS, C.F. Leaded (Including leaded extra)
Carbon
LosAngeles P2, S30 ..11.75*
Alloy
Ambridge,Pa. W18 ..10.175
BeaverFalls,Pa. M12..10.175
Camden,N.J. P13 ....10.35
Chicago W18 ....10.175
Elyria,O. W8 ....10.175
Monaca,Pa. S17 ....10.175
Newark,N.J. W18 ....10.35
SpringCity,Pa. K3 ....10.35

*Grade A; add 0.050c for Grade B.

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....7.65
BeaverFalls,Pa. M12,R2..7.65
Birmingham C15 ....8.25
Buffalo B5 ....7.70
Camden,N.J. P13 ....8.10
Carnegie,Pa. C12 ....7.65
Chicago W18 ....7.65
Cleveland A7, C20 ....7.65
Detroit B5, P17 ....7.85
Detroit S41 ....7.65
Donora,Pa. A7 ....7.65
Elyria,O. W8 ....7.65
FranklinPark,Ill. N5 ....7.65
Gary,Ind. R2 ....7.65
GreenBay,Wis. F7 ....7.65
Hammond,Ind. J5, L2 ..7.65
Hartford,Conn. R2 ....8.15
Harvey,Ill. B5 ....7.65
LosAngeles(49) S30 ....9.10
LosAngeles(49) P2, R2..9.10
Mansfield,Mass. B2 ....8.20
Massillon,O. R2, R8 ....7.65
Midland,Pa. C18 ....7.65
Monaca,Pa. S17 ....7.65
Newark,N.J. W18 ....8.10
NewCastle,Pa.(17) B4 ..7.65
Pittsburgh J5 ....7.65
Plymouth,Mich. P5 ....7.90
Putnam,Conn. W18 ....8.20
Readville,Mass. C14 ....8.20
S.Chicago,Ill. W14 ....7.65
SpringCity,Pa. K3 ....8.10
Struthers,O. Y1 ....7.65
Warren,O. C17 ....7.65
Willimantic,Conn. J5 ....8.15
Waukegan,Ill. A7 ....7.65
Youngstown F3, Y1 ....7.65

BARS, Cold-Finished Carbon (Turned and Ground)
Cumberland,Md.(5) C19..6.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ....9.025
BeaverFalls,Pa. M12,R2 9.025
Bethlehem,Pa. B2 ....9.025
Bridgeport,Conn. C32 ..9.175
Buffalo B5 ....9.025
Camden,N.J. P13 ....9.20
Canton,O. T7 ....9.025
Carnegie,Pa. C12 ....9.025
Chicago W18 ....9.025
Cleveland A7, C20 ....9.025
Detroit B5, P17 ....9.225
Detroit S41 ....9.025
Donora,Pa. A7 ....9.025
Elyria,O. W8 ....9.025
FranklinPark,Ill. N5 ....9.025
Gary,Ind. R2 ....9.025
GreenBay,Wis. F7 ....9.025
Hammond,Ind. J5, L2 ..9.025
Hartford,Conn. R2 ....9.325
Harvey,Ill. B5 ....9.025
Lackawanna,N.Y. B2 ..9.025
LosAngeles P2, S30 ...11.00
Mansfield,Mass. B5 ....9.325
Massillon,O. R2, R8 ....9.025
Midland,Pa. C18 ....9.025
Monaca,Pa. S17 ....9.025
Newark,N.J. W18 ....9.20
Plymouth,Mich. P5 ....9.225
S.Chicago,Ill. W14 ....9.025
SpringCity,Pa. K3 ....9.20
Struthers,O. Y1 ....9.025
Warren,O. C17 ....9.025
Waukegan,Ill. A7 ....9.025
Willimantic,Conn. J5 ..9.325
Worcester,Mass. A7 ....9.325
Youngstown F3, Y1 ....9.025

BARS, Reinforcing (To Fabricators)

AlabamaCity,Ala. R2 ..5.675
Atlanta A11 .....5.675
Birmingham C15 .....5.675
Buffalo R2 .....5.675
Cleveland R2 .....5.675
Ecorse,Mich. G5 .....5.675
Emeryville,Calif. J7 ...6.425
Fairfield,Ala. T2 .....5.675
Fairless,Pa. U5 .....5.825
Fontana,Calif. K1 .....6.375
Ft.Worth,Tex.(4)(26)T4 6.125
Gary,Ind. U5 .....5.675
Houston S5 .....5.925
Ind.Harbor,Ind. I-2, Y1 5.675
Johnstown,Pa. B2 ....5.675
Joliet,Ill. P22 .....5.675
KansasCity,Mo. S5 ....5.925
Kokomo,Ind. C16 .....5.775
Lackawanna,N.Y. B2 ..5.675
LosAngeles B3 .....6.375
Madison,Ill. L1 .....5.875
Milton,Pa. M18 .....5.825
Minnequa,Colo. C10 ...6.125
Niles,Calif. P1 .....6.375
Pittsburg,Calif. C11 ..6.375
Pittsburgh J5 .....5.675
Portland,Oreg. O4 ....6.425
SandSprings,Okla. S5 ..5.925
Seattle B3, N14 .....6.425
S.Chicago,Ill. R2, W14 5.675
S.Duquesne,Pa. U5 ....5.675
S.SanFrancisco B3 ....6.425
SparrowsPoint,Md. B2 ..5.675
Sterling,Ill.(1) N15 ...5.675
Sterling,Ill. N15 .....5.775
Struthers,O. Y1 .....5.675
Tonawanda,N.Y. B12 ...6.10
Torrance,Calif. C11 ..6.375
Youngstown R2, U5 ..5.675

BARS, Reinforcing (Fabricated; to Consumers)

Baltimore B2 .....7.42
Boston B2, U8 .....8.15
Chicago U8 .....7.41
Cleveland U8 .....7.39
Houston S5 .....7.60
Johnstown,Pa. B2 .....7.33
KansasCity,Mo. S5 ....7.60
Lackawanna,N.Y. B2 ..7.35
Marion,O. P11 .....6.70
Newark,N.J. U8 .....7.80
Philadelphia U8 .....7.63
Pittsburgh J5, U8 .....7.35
SandSprings,Okla. S5 ..7.60
Seattle B3, N14 .....7.95
SparrowsPt.,Md. B2 ...7.33
St.Paul U8 .....8.17
Williamsport,Pa. S19 ...7.25

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 14.45
Economy,Pa.(D.R.)B14 18.00
Economy(Staybolt)B14 18.45

RAIL STEEL BARS

ChicagoHts.(3) C2, I-2, 5.575
ChicagoHts.(4)(44) I-2, 5.675
ChicagoHts.(4) C2 ....5.675
Franklin,Pa.(3) F5 ....5.575
Franklin,Pa.(4) F5 ....5.675
JerseyShore,Pa.(3) J8 ..5.55
Marion,O.(3) P11 .....5.575
Tonawanda(3) B12 ....5.575
Tonawanda(4) B12 ....6.10

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

AlabamaCity,Ala. R2 ..5.10
Allenport,Pa. P7 .....5.10
Aliquippa,Pa. J5 .....5.10
Ashland,Ky.(8) A10 ...5.10
Cleveland J5, R2 .....5.10
Conshohocken,Pa. A3 ..5.15
Detroit(8) M1 .....5.10
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 .....5.10
Fairless,Pa. U5 .....5.15
Farrell,Pa. S3 .....5.10
Fontana,Calif. K1 ....5.825
Gary,Ind. U5 .....5.10
Geneva,Utah C11 .....5.20
GraniteCity,Ill.(8) G4 ..5.20
Ind.Harbor,Ind. I-2, Y1 5.10
Irvin,Pa. U5 .....5.10
Lackawanna,N.Y. B2 ..5.10
Mansfield,O. E6 .....5.10
Munhall,Pa. U5 .....5.10
Newport,Ky. A2 .....5.10
Niles,O. M21, S3 .....5.10
Pittsburg,Calif. C11 ..5.80
Pittsburgh J5 .....5.10
Portsmouth,O. P12 .....5.10
Riverdale,Ill. A1 .....5.10
Sharon,Pa. S3 .....5.10
S.Chicago,Ill. U5, W14 ..5.10
SparrowsPoint,Md. B2 ..5.10
Steubenville,O. W10 ...5.10
Warren,O. R2 .....5.10
Weirton,W.Va. W6 .....5.10
Youngstown U5, Y1 ....5.10

SHEETS, H.R. (19 Ga. & Lighter)

Niles,O. M21 .....6.275

SHEETS, H.R. Alloy

Gary,Ind. U5 .....8.40
Ind.Harbor,Ind. YI 8.40
Irvin,Pa. U5 .....8.40
Munhall,Pa. U5 .....8.40
Newport,Ky. A2 .....8.40
Youngstown U5 .....8.40
Youngstown YI 8.40

SHEETS, H.R. (14 Ga. & Heavier) High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....7.525
Ashland,Ky. A10 .....7.525
Cleveland J5, R2 .....7.525
Conshohocken,Pa. A3 ..7.575
Ecorse,Mich. G5 .....7.525
Fairfield,Ala. T2 .....7.525
Fairless,Pa. U5 .....7.575
Farrell,Pa. S3 .....7.525
Fontana,Calif. K1 .....8.25
Gary,Ind. U5 .....7.525
Ind.Harbor,Ind. I-2, Y1 7.525
Irvin,Pa. U5 .....7.525
Lackawanna(35) B2 ..7.525
Munhall,Pa. U5 .....7.525
Pittsburgh J5 .....7.525
S.Chicago,Ill. U5, W14 7.525
Sharon,Pa. S3 .....7.525
SparrowsPoint(36) B2..7.525
Warren,O. R2 .....7.525
Weirton,W.Va. W6 ....7.525
Youngstown U5, Y1 ..7.525

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ....5.35
Cleveland R2 .....5.875
Warren,O. R2 .....5.875

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....7.05
Middletown,O. A10 ...6.775
Warren,O. R2 .....7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity,Ala. R2 ..6.275
Allenport,Pa. P7 .....6.275
Aliquippa,Pa. J5 .....6.275
Cleveland J5, R2 .....6.275
Conshohocken,Pa. A3 ..6.325
Detroit M1 .....6.275
Ecorse,Mich. G5 .....6.275
Fairfield,Ala. T2 .....6.275
Fairless,Pa. U5 .....6.325
Follansbee,W.Va. F4 ..6.275
Fontana,Calif. K1 .....7.40
Gary,Ind. U5 .....6.275
GraniteCity,Ill. G4 ....6.375
Ind.Harbor,Ind. I-2, Y1 6.275
Irvin,Pa. U5 .....6.275
Lackawanna,N.Y. B2 ..6.275
Mansfield,O. E6 .....6.275
Middletown,O. A10 .....6.275
Newport,Ky. A2 .....6.275
Pittsburg,Calif. C11 ...7.225
Pittsburgh J5 .....6.275
Portsmouth,O. P12 .....6.275
SparrowsPoint,Md. B2..6.275
Steubenville,O. W10 ...6.275
Warren,O. R2 .....6.275
Weirton,W.Va. W6 .....6.275
Yorkville,O. W10 .....6.275
Youngstown Y1 .....6.275

SHEETS, Cold-Rolled, High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....9.275
Cleveland J5, R2 .....9.275
Ecorse,Mich. G5 .....9.275
Fairless,Pa. U5 .....9.325
Fontana,Calif. K1 .....10.40
Gary,Ind. U5 .....9.275
Ind.Harbor,Ind. I-2,Y1 .9.275
Irvin,Pa. U5 .....9.275
Lackawanna(37) B2 ..9.275
Pittsburgh J5 .....9.275
SparrowsPoint(38) B2..9.275
Warren,O. R2 .....9.275
Weirton,W.Va. W6 ....9.275
Youngstown Y1 .....9.275

SHEETS, Culvert

	Cu Steel	Cu Fe
Ala.City,Ala. R2	7.225	....
Ashland,Ky. A10	7.225	7.475
Canton,O. R2	7.225	7.75
Fairfield T2	7.225	7.475
Gary,Ind. U5	7.225	7.475
GraniteCity,Ill.G4	7.325	....
Ind.Harbor I-2	7.225	7.475
Irvin,Pa. U5	7.225	7.475
Kokomo,Ind. C16	7.325	....
MartinsFry. W10	7.225	7.475
Pitts.,Calif. C11	7.975	....
SparrowsPt. B2	7.225	....
Pittsburgh J5	7.225	....

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2 ...7.475

SHEETS, Galvanized Steel Hot-Dipped

AlabamaCity,Ala. R2 .6.875‡
Ashland,Ky. A10 ....6.875†
Canton,O. R2 .....6.875‡
Dover,O. E6 .....6.875†
Fairfield,Ala. T2 ....6.875†
Gary,Ind. U5 .....6.875†
GraniteCity,Ill. G4 ...6.975•
Ind.Harbor,Ind. I-2 ...6.875†
Irvin,Pa. U5.....6.875†
Kokomo,Ind. C16 ....6.975‡
MartinsFerry,O. W10 .6.875•
Middletown,O. A10 ...6.875†
Pittsburg,Calif. C11 ..7.625•
Pittsburgh J5 .....6.875†
SparrowsPt.,Md. B2 ..6.875†
Warren,O. R2 .....6.875†
Weirton,W.Va. W6 ....6.875•

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 .....7.325

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin,Pa. U5 .....10.025
SparrowsPt.(39) B2 ..10.025
Pittsburgh J5 .....10.125

SHEETS, Galvannealed Steel

Canton,O. R2 .....7.275
Irvin,Pa. U5 .....7.275

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland,Ky. A10 .....7.125
Middletown,O. A10 ....7.125

SHEETS, Electrogalvanized

Cleveland(28) R2 .....7.65
Niles,O.(28) R2 .....7.65
Youngstown J5 .....7.50
Weirton,W.Va. W6 ....7.50

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) 9.525
Butler,Pa. A10 (type 2) 9.625

SHEETS, Enameling Iron

Ashland,Ky. A10 .....6.775
Cleveland R2 .....6.775
Fairfield,Ala. T2 .....6.775
Gary,Ind. U5 .....6.775
GraniteCity,Ill. G4 ....6.875
Ind.Harbor,Ind. I-2,Y1 6.775
Irvin,Pa. U5 .....6.775
Middletown,O. A10 ....6.775
Niles,O. M21, S3 .....6.775
Youngstown Y1 .....6.775

BLUED STOCK, 29 Gage

Follansbee,W.Va. F4 ...8.70
Ind.Harbor,Ind. I-2 ....8.70
Mansfield O. E6 .....8.70
Warren,O. R2 .....8.70
Yorkville,O. W10 .....8.70

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va.W10 7.225
Gary,Ind. U5 .....7.225
Mansfield,O. E6 .....7.225
Middletown,O. A10 ....7.225
Niles,O. M21, S3 .....7.225
Warren,O. R2 .....7.225
Weirton,W.Va. W6 ....7.225

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....7.625

Key To Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div., H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Plant, Wickwire Spencer Steel Div., Colo. Fuel & Iron
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C32 Carpenter Steel of N.Eng.

D2 Detroit Steel Corp.
D3 Dearborn Div., Sharon Steel Corp.
D4 Disston Div., H. K Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas & Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire-Reeves Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins Steel Tube Works
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.
L8 Leschen Wire Rope Div., H. K. Porter Co. Inc.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md. Fine & Special Wire
M17 Metal Forming Corp.
M18 Milton Steel Div., Merritt-Chapman&Scott
M21 Mallory-Sharon Metals Corp.
M22 Mill Strip Products Co.

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelsen Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N14 Northwest. Steel Rolling Mills Inc.
N15 Northwestern S.&W. Co.
N20 Neville Ferro Alloy Co.

O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co., Sub. of Barium Steel Corp.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Div., Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., American Chain & Cable
P17 Plymouth Steel Corp.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.

R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div., Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Div., Copperweld Steel Co.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co.Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service
S41 Stainless & Strip Div., J&L Steel Corp.
S42 Southern Elec. Steel Co.

T2 Tenn. Coal & Iron Div., U. S. Steel Corp.
T3 Tenn. Products & Chemical Corp.
T4 Texas Steel Co.
T5 Thomas Strip Div., Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.

U3 Union Wire Rope Corp.
U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div., U. S. Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan-Kidd Steel Div., H. K. Porter Co.

W1 Wallace Barnes Steel Div., Associated Spring Corp.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.

Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	5.10
Allenport,Pa. P7	5.10
Alton,Ill. L1	5.30
Ashland,Ky.(8) A10	5.10
Atlanta A11	5.10
Bessemer,Ala. T2	5.10
Birmingham C15	5.10
Buffalo(27) R2	5.10
Conshohocken,Pa. A3	5.15
Detroit M1	5.10
Ecorse,Mich. G5	5.10
Fairfield,Ala. T2	5.10
Farrell,Pa. S3	5.10
Fontana,Calif. K1	5.825
Gary,Ind. U5	5.10
Ind.Harbor,Ind. I-2, Y1	5.10
Johnstown,Pa.(25) B2	5.10
Lackaw'na,N.Y.(25) B2	5.10
LosAngeles(25) B3	5.85
LosAngeles C1	8.60
Minnequa,Colo. C10	6.20
Riverdale,Ill. A1	5.10
SanFrancisco S7	6.60
Seattle(25) B3	6.10
Seattle N14	6.60
Sharon,Pa. S3	5.10
S.Chicago W14	5.10
S.SanFrancisco(25) B3	5.85
SparrowsPoint,Md. B2	5.10
Torrance,Calif. C11	5.85
Warren,O. R2	5.10
Weirton,W.Va. W6	5.10
Youngstown U5	5.10

STRIP, Hot-Rolled Alloy

Carnegie,Pa., S18	8.10
Farrell,Pa. S3	8.40
Gary,Ind. U5	8.40
Houston S5	8.65
Ind.Harbor,Ind. Y1	*8.40*
KansasCity,Mo. S5	8.65
LosAngeles B3	9.60
Lowellville,O. S3	8.40
Newport,Ky. A2	8.40
Sharon,Pa. A2, S3	8.40
S.Chicago,Ill. W14	8.40
Youngstown U5	8.40
Youngstown Y1	*8.40*

STRIP, Hot-Rolled High-Strength, Low-Alloy

Ashland,Ky. A10	7.575
Bessemer,Ala. T2	7.575
Conshohocken,Pa. A3	7.575
Ecorse,Mich. G5	7.575
Fairfield,Ala. T2	7.575
Farrell,Pa. S3	7.575
Gary,Ind. U5	7.575
Ind.Harbor,Ind. I-2,Y1	7.575
Lackawanna,N.Y. B2	7.575
LosAngeles(25) B3	8.325
Seattle(25) B3	8.575
Sharon,Pa. S3	7.575
S.Chicago,Ill. W14	7.575
S.SanFrancisco(25) B3	8.325
SparrowsPoint,Md. B2	7.575
Warren,O. R2	7.575
Weirton,W.Va. W6	7.575
Youngstown U5, Y1	7.575

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	5.35
Warren,O. R2	5.875

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6	7.425
Baltimore T6	7.425
Boston T6	7.975
Buffalo S40	7.425
Cleveland A7, J5	7.425
Dearborn,Mich. D3	7.425
Detroit D2, M1, P20	7.425
Dover,O. G6	7.425
Ecorse,Mich. G5	7.15
Evanston,Ill. M22	7.525
Farrell,Pa. S3	7.425
Follansbee,W.Va. F4	7.425
Fontana,Calif. K1	9.20
FranklinPark,Ill. T6	7.525
Ind.Harbor,Ind. Y1	7.425
Indianapolis S41	7.575
LosAngeles J5	9.325
LosAngeles C1	9.30
NewBedford,Mass. R10	7.875
NewBritain,Conn. S15	7.875
NewCastle,Pa. B4, E5	7.425
NewHaven,Conn. D2	7.875
NewKensington,Pa. A6	7.425
Pawtucket,R.I. R3	7.975
Pawtucket,R.I. N8	7.975
Philadelphia P24	7.875
Pittsburgh J5	7.425
Riverdale,Ill. A1	7.525
Rome,N.Y.(32) R6	7.425
Sharon,Pa. S3	7.425
Trenton,N.J.(31) R5	8.875
Wallingford,Conn. W2	7.875
Warren,O. R2, T5	7.425
Worcester,Mass. A7	7.975
Youngstown S41, Y1	7.425

STRIP, Cold-Rolled Alloy

Boston T6	15.90
Carnegie,Pa. S18	15.05
Cleveland A7	15.05
Dover,O. G6	15.55
Farrell,Pa. S3	15.55
FranklinPark,Ill. T6	15.55
Harrison,N.J. C18	15.55
Indianapolis S41	15.70
Lowellville,O. S3	15.55
Pawtucket,R.I. N8	15.90
Riverdale,Ill. A1	15.55
Sharon,Pa. S3	15.55
Worcester,Mass. A7	15.35
Youngstown S41	15.55

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7	10.80
Dearborn,Mich. D3	10.80
Dover,O. G6	10.80
Ecorse,Mich. G5	10.50
Farrell,Pa. S3	10.80
Ind.Harbor,Ind. Y1	10.80
Sharon,Pa. S3	10.80
Warren,O. R2	10.80

STRIP, Cold-Finished Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol,Conn. W1	...	10.70	12.90	16.10	19.30
Carnegie,Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn,Mich. D3	9.05	10.50	12.70	....	....
Detroit D2	9.05	10.50	12.70	15.70	....
Dover,O. G6	8.95	10.40	12.60	15.60	18.55
Evanston,Ill. M22	8.95	10.40	12.60	15.60	....
Farrell,Pa. S3	8.95	10.40	12.60	15.60	18.55
Fostoria,O. S1	10.05	10.40	12.60	15.60	....
FranklinPark,Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison,N.J. C18	....	....	12.90	16.10	19.30
Indianapolis J5	9.10	10.55	12.60	15.60	18.55
LosAngeles C1	11.15	12.60	14.80	17.80	....
LosAngeles J5	11.15	12.60	14.80	....	....
NewBritain,Conn. S15	9.40	10.70	12.90	15.90	18.85
NewCastle,Pa. B4, E5	8.95	10.40	12.60	15.60	....
NewHaven,Conn. D2	9.40	10.70	12.90	15.90	....
NewKensington,Pa. A6	8.95	10.40	12.60	15.60	....
New York W3	....	10.70	12.90	16.10	19.30
Pawtucket,R.I. N8	9.50	10.70	12.90	15.90	18.85
Riverdale,Ill. A1	9.05	10.40	12.60	15.60	18.55
Rome,N.Y.(32) R6	8.95	10.40	12.60	15.60	18.55
Sharon,Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton,N.J. R5	....	10.70	12.90	15.90	18.85
Wallingford,Conn. W2	9.40	10.70	12.90	15.90	18.75
Warren,O. T5	8.95	10.40	12.60	15.60	18.55
Worcester,Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngstown J5	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)

	Up to 0.80C	0.81-1.05C	1.06-1.35C
Bristol,Conn. W1	18.85	22.95	27.80
Buffalo W12	18.25	....	....
Fostoria,O. S1	19.05	22.15	....
FranklinPark,Ill. T6	19.20	23.30	28.15
Harrison,N.J. C18	18.85	22.95	27.80
NewYork W3	18.85	22.95	27.80
Palmer,Mass. W12	18.85	....	....
Trenton,N.J. R5	18.85	22.95	27.80
Worcester,Mass. A7, T6	18.85	22.95	27.80
Youngstown J5	*19.20*	*23.30*	*28.15*

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$8.75	$9.00	$9.40
Fairfield,Ala. T2	8.85	9.10	9.50
Fairless,Pa. U5	8.85	9.10	9.50
Fontana,Calif. K1	9.50	9.75	10.15
Gary,Ind. U5	8.75	9.00	9.40
GraniteCity,Ill. G4	8.85	9.10	9.50
IndianaHarbor,Ind. I-2, Y1	8.75	9.00	9.40
Irvin,Pa. U5	8.75	9.00	9.40
Niles,O. R2	8.75	9.00	9.40
Pittsburg,Calif. C11	9.50	9.75	10.15
SparrowsPoint,Md. B2	8.85	9.10	9.50
Yorkville,O. W10	8.75	9.00	9.40

ELECTROTIN (22-27 Gage; Dollars per 100 lb)			
Aliquippa,Pa. J5	7.725	7.925	....
Niles,O. R2	7.725	7.925	8.125

TIN PLATE, American	1.25 lb	1.50 lb
Aliquippa,Pa.J5	$10.05	$10.30
Fairfield,Ala. T2	10.15	10.40
Fairless,Pa. U5	10.15	10.40
Fontana,Calif.K1	10.80	11.05
Gary,Ind. U5	10.05	10.30
Ind.Harb. Y1	10.05	10.30
Pitts.,Calif. C11	10.80	11.05
Sp.Pt.,Md. B2	10.15	10.40
Weirton,W.Va. W6	10.05	10.30
Yorkville,O. W10	10.05	10.30

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$7.85
Fairfield,Ala. T2	7.95
Fairless,Pa. U5	7.95
Fontana,Calif. K1	8.60
Gary,Ind. U5	7.85
GraniteCity,Ill. G4	7.95
Ind.Harbor,Ind. I-2, Y1	7.85
Irvin,Pa. U5	7.85
Niles,O. R2	7.85
Pittsburg,Calif. C11	8.60
SparrowsPoint,Md. B2	7.95
Weirton,W.Va. W6	7.85
Yorkville,O. W10	7.85

HOLLOWARE ENAMELING Black Plate (29 Gage)

Aliquippa,Pa. J5	7.50
Gary,Ind. U5	7.50
GraniteCity,Ill. G4	7.60
Ind.Harbor,Ind. Y1	7.50
Irvin,Pa. U5	7.50
Yorkville,O. W10	7.50

MANUFACTURING TERNES (Special Coated, Base Box)

Gary,Ind. U5	$9.70
Irvin,Pa. U5	9.70

ROOFING SHORT TERNES (8 lb Coated, Base Box)

Gary,Ind. U5	$11.25

STRIP, Galvanized (Continuous)

Farrell,Pa. S3	7.50
Sharon,Pa. S3	7.50

TIGHT COOPERAGE HOOP

Atlanta A11	5.65
Farrell,Pa. S3	5.525
Riverdale,Ill. A1	5.675
Sharon,Pa. S3	5.525
Youngstown U5	5.525

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	8.175

STRIP, C.R. Electrogalvanized

Cleveland A7	7.425
Dover,O. G6	7.425*
Evanston,Ill. M22	7.525*
Riverdale,Ill. A1	7.525*
Warren,O. B9, S3, T5	7.425*
Worcester,Mass. A7	7.975
Youngstown J5	7.15*

*Plus galvanizing extras.

SILICON STEEL

C.R. COILS & CUT LENGTHS (22 Ga.)

Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	11.70	12.40	13.55	14.65
Brackenridge,Pa. A4	....	....	12.40	13.55	14.65
GraniteCity,Ill. G4	9.975*	11.30*	12.00*	13.15*	....
IndianaHarbor,Ind. I-2	9.875*	11.20*	11.90*	13.05*	....
Mansfield,O. E6	9.875*	11.70	12.40	13.55	14.65
Newport,Ky. A2	9.875	11.70*	12.40*	13.55*	14.65*
Niles,O. M21	9.875*	11.70	12.40	13.55	....
Vandergrift,Pa. U5	9.875*	11.70	12.40	13.55	14.65
Warren,O. R2	9.875*	11.70	12.40	13.55	14.65
Zanesville,O. A10	....	11.70†	12.40	13.55	14.65

	Stator
Vandergrift,Pa. U5	8.10
Mansfield,O. E6	8.10

SHEETS (22 Ga., coils & cut lengths)

Fully Processed (Semiprocessed ½c lower)	T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	15.70	16.30	16.80	17.85
Vandergrift,Pa. U5	15.70	16.30	16.80	17.85
Zanesville,O. A10	15.70	16.30	16.80	17.85

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge,Pa. A4	....	18.10	19.70	20.20	20.70	15.70††
Butler,Pa. A10	....	....	....	19.70	20.20	20.70
Vandergrift,Pa. U5	..	17.10	18.10	19.70	20.20	20.70
Warren,O. R2	....	....	....	....	....	15.70‡

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. ††Coils only.

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	8.00
Aliquippa,Pa. J5	8.00
Alton,Ill. L1	8.20
Atlanta A1	8.00
Bartonville,Ill. K4	8.10
Buffalo W12	8.00
Chicago W13	8.00
Cleveland A7, C20	8.00
Crawfordsville,Ind. M8	8.10
Donora,Pa. A7	8.00
Duluth A7	8.00
Fairfield,Ala. T2	8.00
Fostoria,O.(24) S1	8.10
Houston S5	8.25
Jacksonville, Fla. M8	8.35
Johnstown,Pa. B2	8.00
Joliet,Ill. A7	8.00
KansasCity,Mo. S5	8.25
Kokomo,Ind. C16	8.10
LosAngeles B3	8.95
Minnequa,Colo. C10	8.25
Monessen,Pa. P7, P16	8.00
N.Tonawanda,N.Y. B11	8.00
Palmer,Mass. W12	8.30
Pittsburg,Calif. C11	8.95
Portsmouth,O. P12	8.00
Rankin,Pa. A7	8.00
S.Chicago,Ill. R2	8.00
S.SanFrancisco C10	8.95
SparrowsPoint,Md. B2	8.10
Sterling,Ill.(1) N15	8.00
Sterling,Ill. N15	8.10
Struthers,O. Y1	8.00
Waukegan,Ill. A7	8.00
Worcester,Mass. A7	8.30

WIRE, Cold Heading Carbon

Elyria,O. W8	8.00

WIRE, Gal'd., for ACSR

Bartonville,Ill. K4	12.65
Buffalo W12	13.40
Cleveland A7	12.65
Donora,Pa. A7	12.65
Duluth A7	12.65
Johnstown,Pa. B2	13.40
Minnequa,Colo. C10	*12.775*
Monessen,Pa. P16	12.65
Monessen,Pa. P7	13.40
Muncie,Ind. I-7	13.60
NewHaven,Conn. A7	12.95
Palmer,Mass. W12	13.70
Pittsburg,Calif. C11	13.45
Portsmouth,O. P12	12.65
Roebling,N.J. R5	*12.95*
SparrowsPt.,Md. B2	13.50
Struthers,O. Y1	*13.40*
Trenton,N.J. A7	12.95
Waukegan,Ill. A7	12.65
Worcester,Mass. A7	12.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5	9.75
Alton,Ill. L1	9.95
Buffalo W12	9.75
Cleveland A7	9.75
Donora,Pa. A7	9.75
Duluth A7	9.75
Johnstown,Pa. B2	9.75
KansasCity,Mo. S5	10.00
LosAngeles B3	10.70
Minnequa,Colo. C10	9.95
Monessen,Pa. P7, P16	9.75
NewHaven,Conn. A7	10.05
Palmer,Mass. W12	10.05
Pittsburg,Calif. C11	10.25
Portsmouth,O. P12	9.75
Roebling,N.J. R5	10.05
S.Chicago,Ill. R2	9.75
S.SanFrancisco C10	10.70
SparrowsPt.,Md. B2	9.85
Struthers,O. Y1	9.75
Trenton,N.J. A7	10.05
Waukegan,Ill. A7	9.75
Worcester,Mass. A7	10.05

WIRE, MB Spring, High-Carbon

Aliquippa,Pa. J5	9.75
Alton,Ill. L1	9.95
Bartonville,Ill. K4	9.85
Buffalo W12	9.75
Cleveland A7	9.75
Donora,Pa. A7	9.75
Duluth A7	9.75
Fostoria,O. S1	9.80
Johnstown,Pa. B2	9.75
KansasCity,Mo. S5	10.00
LosAngeles B3	10.70
Milbury,Mass.(12) N6	10.05
Minnequa,Colo. C10	9.95
Monessen,Pa. P7, P16	9.75
Muncie,Ind. I-7	9.95
Palmer,Mass. W12	10.05
Pittsburg,Calif. C11	10.70
Portsmouth,O. P12	9.75
Roebling,N.J. R5	10.05
S.Chicago,Ill. R2	9.75
S.SanFrancisco C10	10.70
SparrowsPt.,Md. B2	9.85
Struthers,O. Y1	9.75
Trenton,N.J. A7	10.05
Waukegan,Ill. A7	9.75
Wor'ster,Mass.A7,J4,T6	10.05

WIRE, Fine & Weaving(8" Coils)

Alton,Ill. L1	16.50
Bartonville,Ill. K4	16.40
Chicago W13	16.30
Cleveland A7	16.30
Crawfordsville,Ind. M8	16.40
Fostoria,O. S1	16.30
Houston S5	15.85
Jacksonville,Fla. M8	16.65
Johnstown,Pa. B2	16.30
KansasCity,Mo. S5	15.85
Kokomo,Ind. C16	16.30
Minnequa,Colo. C10	16.55
Monessen,Pa. P16	15.60
Muncie,Ind. I-7	16.50
Palmer,Mass. W12	16.60
S.SanFrancisco C10	17.15
Waukegan,Ill. A7	16.30
Worcester,Mass. A7, J6	16.60

WIRE, Tire Bead

Bartonville,Ill. K4	17.15
Monessen,Pa. P16	16.55
Roebling,N.J. R5	17.65

ROPE WIRE (A)

Bartonville,Ill. K4	13.45
Buffalo W12	13.45
Fostoria,O. S1	13.45
Johnstown,Pa. R2	13.45
Monessen,Pa. P7	13.45
Muncie,Ind. I-7	13.65
Palmer,Mass. W12	13.75
Portsmouth,O. P12	13.45
Roebling,N.J. R5	13.75
St.Louis L8	12.75
SparrowsPt.,Md. B2	13.55
Struthers,O. Y1	*13.45*
Worcester,Mass. J4	13.75

(A) Plow and Mild Plow; add 0.25c for Improved Plow

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	12.35
Baltimore T6	12.65
Boston T6	12.65
Buffalo W12	11.65
Chicago W13	12.45
Cleveland A7	12.35
Crawfordsville,Ind. M8	11.65
Dover,O. G6	12.35
Farrell,Pa. S3	11.65
Fostoria,O. S1	12.35
FranklinPark,Ill. T6	12.45
Kokomo,Ind. C16	*12.35*
Massillon,O. R8	12.35
Milwaukee C23	12.55
Monessen,Pa. P7, P16	11.65
Palmer,Mass. W12	11.95
Pawtucket,R.I. N8	11.95
Philadelphia P24	12.65
Riverdale,Ill. A1	12.45
Rome,N.Y. R6	12.35
Sharon,Pa. S3	11.65
Trenton,N.J. R5	12.65
Warren,O. R9	11.65
Worcester,Mass. A7,T6	12.65

NAILS, Stock

	Col.
AlabamaCity,Ala. R2	173
Aliquippa,Pa. J5	173
Atlanta A11	175
Bartonville,Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville,Ind. M8	175
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	178
Jacksonville,Fla. M8	175
Johnstown,Pa. B2	173
Joliet,Ill. A7	173
KansasCity,Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	178
Monessen,Pa. P7	173
Pittsburg,Calif. C11	192
Rankin,Pa. A7	173
S.Chicago,Ill. R2	173
SparrowsPt.,Md. B2	175
Sterling,Ill. (7) N15	175
Worcester,Mass. A7	179

(To Wholesalers: per cwt)

Galveston,Tex. D7 ....$9.10

NAILS, Cut (100 lb keg) To Dealers (33)

Wheeling,W.Va. W10 ..$9.80

POLISHED STAPLES

	Col.
AlabamaCity,Ala. R2	175
Aliquippa,Pa. J5	175
Atlanta A11	177
Bartonville,Ill. K4	177
Crawfordsville,Ind. M8	177
Donora,Pa. A7	175
Duluth A7	175
Fairfield,Ala. T2	175
Houston S5	180
Jacksonville,Fla. M8	177
Johnstown,Pa. B2	175
Joliet,Ill. A7	175
KansasCity,Mo. S5	180
Kokomo,Ind. C16	177
Minnequa,Colo. C10	180
Pittsburg,Calif. C11	194
Rankin,Pa. A7	175
S.Chicago,Ill. R2	175
SparrowsPt.,Md. B2	177
Sterling,Ill. (7) N15	175
Worcester,Mass. A7	181

TIE WIRE, Automatic Baler (14½ Ga.) (per 97 lb Net Box)

Coil No. 3150	
AlabamaCity,Ala. R2	$10.26
Atlanta A11	10.36
Bartonville,Ill. K4	10.36
Buffalo W12	10.26
Chicago W13	10.26
Crawfordsville,Ind. M8	10.36
Donora,Pa. A7	10.26
Duluth A7	10.26
Fairfield,Ala. T2	10.26
Houston S5	10.51
Jacksonville,Fla. M8	10.36
Johnstown,Pa. B2	10.26
Joliet,Ill. A7	10.26
KansasCity,Mo. S5	10.51
Kokomo,Ind. C16	10.36
LosAngeles B3	11.05
Minnequa,Colo. C10	10.51
Pittsburg,Calif. C11	11.04
S.Chicago,Ill. R2	10.26
S.SanFrancisco C10	11.04
SparrowsPt.,Md. B2	10.36
Sterling,Ill. (37) N15	10.36

Coil No. 6500 Stand.	
AlabamaCity,Ala. R2	$10.60
Atlanta A11	10.70
Bartonville,Ill. K4	10.70
Buffalo W12	10.60
Chicago W13	10.60
Crawfordsville,Ind. M8	10.70
Donora,Pa. A7	10.60
Duluth A7	10.60
Fairfield,Ala. T2	10.60
Houston S5	10.85
Jacksonville,Fla. M8	10.70
Johnstown,Pa. B2	10.60
Joliet,Ill. A7	10.60
KansasCity,Mo. S5	10.85
Kokomo,Ind. C16	10.70
LosAngeles B3	11.15
Minnequa,Colo. C10	10.85
Monessen,Pa. P7	10.60
Pittsburg,Calif. C11	11.15
S.Chicago,Ill. R2	10.65
S.SanFrancisco C10	11.15
SparrowsPt.,Md. B2	10.75
Sterling,Ill. (37) N15	10.75

Coil No. 6500 Interim	
AlabamaCity,Ala. R2	$10.65
Atlanta A11	10.75
Bartonville,Ill. K4	10.75
Buffalo W12	10.65
Chicago W13	10.65
Crawfordsville,Ind. M8	10.75
Donora,Pa. A7	10.65
Duluth A7	10.65
Fairfield,Ala. T2	10.65
Houston S5	10.90
Jacksonville,Fla. M8	10.75
Johnstown,Pa. B2	10.65
Joliet,Ill. A7	10.65
KansasCity,Mo. S5	10.90
Kokomo,Ind. C16	10.75
Los Angeles B3	11.45
Minnequa,Colo. C10	10.90
Pittsburg,Calif. C11	11.45
S.Chicago,Ill. R2	10.65
S.SanFrancisco C10	11.45
SparrowsPt.,Md. B2	10.75
Sterling,Ill. (37) N15	10.75

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	212
Atlanta A11	214
Bartonville,Ill. K4	214
Crawfordsville,Ind. M8	214
Donora,Pa. A7	212
Duluth A7	212
Fairfield,Ala. T2	212
Houston S5	217
Jacksonville,Fla. M8	214
Joliet,Ill. A7	212
KansasCity,Mo. S5	217
Kokomo,Ind. C16	214
Minnequa,Colo. C10	217
Pittsburg,Calif. C11	236
S.SanFrancisco C10	236
SparrowsPt.,Md. B2	214
Sterling,Ill. (7) N15	211

FENCE POSTS

Birmingham C15	172
ChicagoHts.,Ill. C2, I-2	172
Duluth A7	172
Franklin,Pa. F5	172
Johnstown,Pa. B2	172
Marion,O. P11	172
Minnequa,Colo. C10	177
Sterling,Ill. (1) N15	172
Tonawanda,N.Y. B12	172

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	193†*
Aliquippa,Pa. J5	190§
Atlanta A11	198§
Bartonville,Ill. K4	198
Crawfordsville,Ind. M8	198
Donora,Pa. A7	193†
Duluth A7	193†
Fairfield,Ala. T2	193†
Houston S5	198**
Jacksonville,Fla. M8	198
Johnstown,Pa. B2	196§
Joliet,Ill. A7	192†
KansasCity,Mo. S5	198*•
Kokomo,Ind. C16	195†
Minnequa,Colo. C10	198**
Monessen,Pa. P7	196§
Pittsburg,Calif. C11	213†
Rankin,Pa. A7	193†
S.Chicago,Ill. R2	193*•
S.SanFrancisco C10	213*
SparrowsPoint,Md. B2	198§
Sterling,Ill. (7) N15	198††

WOVEN FENCE, 9-15 Ga.

	Col.
Ala.City,Ala. R2	187**
Aliq'ppa,Pa. 9-11½ga. J5	190§
Atlanta A11	192§
Bartonville,Ill. K4	192
Crawfordsville,Ind. M8	192
Donora,Pa. A7	187†
Duluth A7	187†
Fairfield,Ala. T2	187†
Houston S5	192**
Jacksonville,Fla. M8	192
Johnstown,Pa. (43) B2	190§
Joliet,Ill. A7	187†
KansasCity,Mo. S5	192**
Kokomo,Ind. C16	189†
Minnequa,Colo. C10	192**
Pittsburg,Calif. C11	210†
Rankin,Pa. A7	187†
S.Chicago,Ill. R2	187**
Sterling,Ill. (7) N15	192††

	An'ld Galv. Stone
WIRE (16 gage)	
Ala.City,Ala. R2	17.85 19.40**
Aliq'ppa,Pa. J5	..17.15 18.95
Bartonville,Ill. K4	..17.95 19.75
Cleveland A7	....17.85 ....
Craw'dsville,Ind. M8	..17.95 19.65
Fostoria,O. S1	.18.35 19.90†
Houston S5	....17.40 18.95**
Jacksonville,Fla. M8	..17.95 19.65
Johnstown,Pa. B2	..17.85 19.65§
Joliet,Ill. A7	.....10.60
KansasCity,Mo. S5	....10.85
Kokomo,Ind. C16	....10.70
LosAngeles B3	....11.40
Minnequa,Colo. C10	...10.85
Pittsburg,Calif. C11	...11.40
S.Chicago,Ill. R2	....10.60
S.SanFrancisco C10	...11.40
SparrowsPt.,Md. B2	....10.70
Sterling,Ill. (37) N15	....10.70

Coil No. 6500 Interim	
AlabamaCity,Ala. R2	$10.65
Atlanta A11	10.75
Bartonville,Ill. K4	10.75
Buffalo W12	10.65
Chicago W13	10.65
Crawfordsville,Ind. M8	10.75
Donora,Pa. A7	10.65
Duluth A7	10.65
Fairfield,Ala. T2	10.65
Houston S5	10.90
Jacksonville,Fla. M8	10.75
Johnstown,Pa. B2	10.65
Joliet,Ill. A7	10.65
KansasCity,Mo. S5	10.90
Kokomo,Ind. C16	10.75
Los Angeles B3	11.45
Minnequa,Colo. C10	10.90
Pittsburg,Calif. C11	11.45
S.Chicago,Ill. R2	10.65
S.SanFrancisco C10	11.45
SparrowsPt.,Md. B2	10.75
Sterling,Ill. (37) N15	10.75

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	212
Atlanta A11	214
Bartonville,Ill. K4	214
Crawfordsville,Ind. M8	214
Donora,Pa. A7	212
Duluth A7	212
Fairfield,Ala. T2	212
Houston S5	217
Jacksonville,Fla. M8	214
Joliet,Ill. A7	212
KansasCity,Mo. S5	217
Kokomo,Ind. C16	214
Minnequa,Colo. C10	217
Pittsburg,Calif. C11	236
S.SanFrancisco C10	236
SparrowsPt.,Md. B2	214
Sterling,Ill. (7) N15	211

FENCE POSTS

Birmingham C15	172
ChicagoHts.,Ill. C2, I-2	172
Duluth A7	172
Franklin,Pa. F5	172
Johnstown,Pa. B2	172
Marion,O. P11	172
Minnequa,Colo. C10	177
Sterling,Ill. (1) N15	172
Tonawanda,N.Y. B12	172

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	193†*
Aliquippa,Pa. J5	190§
Atlanta A11	198§
Bartonville,Ill. K4	198
Crawfordsville,Ind. M8	198
Donora,Pa. A7	193†
Duluth A7	193†
Fairfield,Ala. T2	193†
Houston S5	198**
Jacksonville,Fla. M8	198
Johnstown,Pa. B2	196§
Joliet,Ill. A7	192†
KansasCity,Mo. S5	198*•
Kokomo,Ind. C16	195†
Minnequa,Colo. C10	198**
Monessen,Pa. P7	196§
Pittsburg,Calif. C11	213†
Rankin,Pa. A7	193†
S.Chicago,Ill. R2	193*•
S.SanFrancisco C10	213*
SparrowsPoint,Md. B2	198§
Sterling,Ill. (7) N15	198††

WOVEN FENCE, 9-15 Ga.

	Col.
Ala.City,Ala. R2	187**
Aliq'ppa,Pa. 9-11½ga. J5	190§
Atlanta A11	192§
Bartonville,Ill. K4	192
Crawfordsville,Ind. M8	192
Donora,Pa. A7	187†
Duluth A7	187†
Fairfield,Ala. T2	187†
Houston S5	192**
Jacksonville,Fla. M8	192
Johnstown,Pa. (43) B2	190§
Joliet,Ill. A7	187†
KansasCity,Mo. S5	192**
Kokomo,Ind. C16	189†
Minnequa,Colo. C10	192**
Pittsburg,Calif. C11	210†
Rankin,Pa. A7	187†
S.Chicago,Ill. R2	187**
Sterling,Ill. (7) N15	192††

	An'ld Galv. Stone
WIRE (16 gage)	
Ala.City,Ala. R2	17.85 19.40**
Aliq'ppa,Pa. J5	..17.15 18.95
Bartonville,Ill. K4	..17.95 19.75
Cleveland A7	....17.85 ....
Craw'dsville,Ind. M8	..17.95 19.65
Fostoria,O. S1	.18.35 19.90†
Houston S5	....17.40 18.95**
Jacksonville,Fla. M8	..17.95 19.65
Johnstown,Pa. B2	..17.85 19.65§
Kan.City,Mo. S5	..17.40 ....
Kokomo,Ind. C16	...17.25 18.80†
Minnequa,Colo. C10	..18.10 19.65**
P'im'r,Mass. W12	18.15 19.70†
Pitts.,Calif. C11	18.20 19.75†
S.SanFran. C10	18.20 19.75**
SparrowsPt.,Md. B2	..17.95 19.75§
Sterling(37) N15	17.25 19.05††
Waukegan A7	..17.85 19.40†
Worcester A7	...18.15 ....

WIRE, Merchant Quality (6 to 8 gage) An'ld Galv.

Ala.City,Ala. R2	9.00 9.55**
Aliquippa J5	....8.65 9.325§
Atlanta(48) A11	..9.10 9.775§
Bartonville(48) K4	9.10 9.775
Buffalo W12	....9.00 9.55†
Cleveland A7	....9.00 ....
Crawfordsville,Ind. M8	9.10 9.775
Donora,Pa. A7	..9.00 9.55†
Duluth A7	....9.00 9.55†
Fairfield T2	....9.00 9.55†
Houston(48) S5	..9.25 9.80**
Jacks'ville,Fla. M8	9.10 9.775
Johnstown B2(48)	9.00 9.675§
Joliet,Ill. A7	....9.00 9.55†
Kans.City(48)	S5 9.25 9.80**
Kokomo(48)	C16 ..9.10 9.65†
LosAngeles B3	..9.95 10.625§
Minnequa C10	..9.25 9.80**
Monessen P7(48)	8.65 9.325§
Palmer,Mass. W12	9.30 9.85†
Pitts.,Calif. C11	..9.95 10.50†
Rankin,Pa. A7	....9.00 9.55†
S.Chicago R2	..9.00 9.55**
S.SanFran. C10	..9.95 10.50**
Spar'wsPt.B2(48)	9.10 9.775§
Sterling(48)	N15 9.25 9.925††
Sterling(1)	(48) 9.15 9.825††
Struthers,O. Y1	....9.00 9.65‡
Worcester,Mass. A7	9.30 9.85†

Based on zinc price of: *13.50, †15c, ‡10c. §Less than 10c. ††10.50c. **Subject to zinc equalization extras.

FASTENERS

(Base discounts, shipments of one to four containers, per cent off list, f.o.b. mill)

BOLTS

Machine Bolts
Full Size Body (cut thread)
½ in. and smaller:

3 in. and shorter	53.0
3¼ in. thru 6 in.	47.0
Longer than 6 in.	33.0
⅝ in., 3 in. & shorter	44.0
3¼ in. thru 6 in.	37.0
Longer than 6 in.	27.0

¾ in. thru 1 in:

6 in. and shorter	33.0
Longer than 6 in.	27.0

1⅛ in. and larger:

All lengths	27.0

Undersize Body (rolled thread)
½ in. and smaller:

3 in. and shorter	53.0
3¼ in. thru 6 in.	47.0

Machine Bolts, Hot Galvanized
(Square & Hex, Full & Undersize Body)
½ in. and smaller:

3 in. and shorter	38.0
3¼ in. thru 6 in.	29.0
Longer than 6 in.	15.0

⅝ in. 3 in. and shorter 27.0
3¼ in. thru 6 in. 17.0
Longer than 6 in. 10.0

¾ in. thru 1 in.:

6 in. and shorter	18.0
Longer than 6 in.	7.0

1⅛ in. and larger:

All lengths	7.0

Carriage, Plow & Lag Bolts, Hot Galvanized
½ in. and smaller:

6 in. and shorter	28.0
Larger diameters and longer lengths	13.0

Carriage Bolts
Full Size Body (cut thread) & Undersize Body (rolled thread)
½ in. and smaller:

6 in. and shorter	46.0
Larger diameters and longer lengths	32.0

Lag, Plow, Tap, Blank, Step, Elevator, Tire, and Fitting Up Bolts
½ in. and smaller:

6 in. and shorter	46.0
Larger diameters and longer lengths	32.0

NUTS

(Container quantities and over)

Square Nuts, Reg. & Heavy:

All sizes	56.0

Square Nuts, Reg. & Heavy, Hot Galvanized:

All sizes	41.0

(Full container)

Hex Nuts, Reg. & Heavy
Hot Pressed & Cold Punched:

¾ in. and smaller	62.0
⅞ in. to 1½ in., incl.	56.0
1⅝ in. and larger	51.5

Hex Nuts, Semifinished, Heavy (Incl. Slotted):

¾ in. and smaller	62.0
⅞ in. to 1½ in., incl.	56.0
1⅝ in. and larger	51.5

Hex Nuts, Finished (Incl. Slotted and Castellated):

¾ in. and smaller	65.0
1 in. to 1½ in., incl.	57.0
1⅝ in. and larger	51.5

Semifinished Hex Nuts, Reg. (Incl. Slotted):

⅝ in. and smaller	62.0
¾ in. to ⅞ in., incl.	65.0
1 in. to 1½ in., incl.	57.0
1⅝ in. and larger	51.5

CAP AND SETSCREWS
(Base discounts, packages, per cent off list, f.o.b. mill)
Hex Head Capscrews, Coarse or Fine Thread, Bright:
6 in. and shorter:

⅜ in. and smaller	35.0
⅞, ¾, and 1 in.	16.0
Longer than 6 in.:	
⅜ in. and smaller	3.0
⅞, ¾, and 1 in.	+11.0

High Carbon, Heat Treated:
6 in. and shorter:

⅜ in. and smaller	20.0
⅞, ¾, and 1 in.	+ 5.0

Longer than 6 in.:

⅜ in. and smaller	+19.0
⅞, ¾, and 1 in.	+39.0

Flat Head Capscrews:
¾ in. and smaller, 6 in. and shorter +85.0

Setscrews, Square Head, Cup Point, Coarse Thread:
Through 1 in. diam.:

6 in. and shorter	+ 5.0
Longer than 6 in.	+29.0

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized where Birmingham except where equalization is too great.
Structural ⅞ in., larger 12.85
⅞ in. and shorter: 15.0%

PRESTRESSED STRAND

(High strength, stress relieved; 7 wire uncoated. Net prices per 1000 ft, 40,000 lb and over)

	Strand Diameter, Inches				
	1/4	5/16	3/8	7/16	1/2
Alton,Ill. L1	$32.15	$48.20	$61.55	$81.10	$105.65
Buffalo W12	32.15	48.20	61.55	81.10	105.65
Cleveland A7	32.15	48.20	61.55	81.10	....
KansasCity,Mo. U3	32.15	48.20	61.55	81.10	105.65
Monessen,Pa. P16	32.15	48.20	61.55	81.10	105.65
NewHaven,Conn. A7	32.15	48.20	61.55	81.10	105.65
Pittsburg,Calif. C11	....	48.20	61.55	81.10	....
Pueblo,Colo. W12	32.15	48.20	61.55	81.10	105.65
Roebling,N.J. R5	32.15	48.20	61.55	81.10	105.65
St.Louis L8	32.15	48.20	61.55	81.10	105.65
Waukegan,Ill. A7	32.15	48.20	61.55	81.10	105.65

RAILWAY MATERIALS

	Standard		Tee Rails	
Rails	No. 1	No. 2	All No. 2	60 lb Under
Bessemer,Pa. U5	5.75	5.65	....	6.725
Ensley,Ala. T2	5.75	5.65	....	6.725
Fairfield,Ala. T2	....	....	....	6.725
Gary,Ind. U5	5.75	5.65	....	....
Huntington,W.Va. C15	....	....	....	6.50
Johnstown,Pa. B2	....	....	...(16)	6.725
Lackawanna,N.Y. B2	5.75	5.65	....	6.725
Minnequa,Colo. C10	5.75	5.65	....	7.22
Steelton,Pa. B2	5.75	5.65	....	....
Williamsport,Pa. S19	....	....	....	6.725

TIE PLATES

Fairfield,Ala. T2	6.875
Gary,Ind. U5	6.875
Lackawanna,N.Y. B2	6.875
Minnequa,Colo. C10	7.025
Seattle B3	7.025
Steelton,Pa. B2	6.875
Torrance,Calif. C11	6.875

JOINT BARS

Bessemer,Pa. U5	7.25
Fairfield,Ala. T2	7.25
Joliet,Ill. U5	7.25
Lackawanna,N.Y. B2	7.25
Minnequa,Colo. C10	7.25
Steelton,Pa. B2	7.25

AXLES

Ind.Harbor,Ind. S13	9.125
Johnstown,Pa. B2	9.125

TRACK BOLTS, Untreated

Cleveland R2	15.35
KansasCity,Mo. S5	15.35
Lebanon,Pa. B2	15.35
Minnequa,Colo. C10	15.35
Pittsburgh P14	14.75
Seattle B3	15.85

SCREW SPIKES

Lebanon,Pa. B2	15.10

STANDARD TRACK SPIKES

Fairfield,Ala. T2	9.75
Ind.Harbor,Ind. I-2, Y1	10.10
KansasCity,Mo. S5	10.10
Lebanon,Pa. B2	10.10
Minnequa,Colo. C10	10.10
Pittsburgh J5	10.10
Seattle B3	10.60
S.Chicago,Ill. R2	10.10
Struthers,O. Y1	10.10
Youngstown R2	10.10

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅛ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 8 in., inclusive, 7.05c.
(6) Chicago or Birm. base.
(7) Chicago base 2 cents lower.
(8) 16 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass., base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.85c.
(15) ¾" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(21) Now Haven, Conn. base.
(22) Deld. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.05c, finer than 15 Ga.
(25) Bar mill bands.
(26) Deld. in mill zone, 6.295c.
(27) Bar mill sizes.
(28) Rondetized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.875c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.038" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.685c.
(43) 9-14½ Ga.
(44) To fabricators.
(48) 6-7 Ga.
(49) 3½ in. and smaller rounds; 9.65c, over 3½ in. and other shapes.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25
Ambridge, Pa. N2	+12.25	....	+5.75	....	+3.25	....	+1.75	....	+1.75	....	+2	....	0.5	....
Lorain, O. N3	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25
Youngstown Y1	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25

ELECTRICWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Alton, Ill. L1	....	....	....	....	....	....	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Benwood, W. Va. W10	1.5	+25	+10.5	+34	+21	+42.5	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Butler, Pa. F6	4.5	+22	+8.5	+32	+19.5	+41	....	....	....	....	....	....	....	....
Etna, Pa. N2	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Fairless, Pa. N3	....	....	....	....	....	....	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Fontana, Calif. K1	....	....	....	....	....	....	+10.75	+26	+7.75	+22	+4.25	+17.5	+1.75	+16.75
Indiana Harbor, Ind. Y1	....	....	....	....	....	....	1.25	+14	4.25	+10	7.75	+5.5	10.25	+6.25
Lorain, O. N3	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Sharon, Pa. S4	4.5	+22	+8.5	+32	+19.5	+41	....	....	....	....	....	....	....	....
Sharon, Pa. M6	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Sparrows Pt., Md. B2	0.5	+26	+11.5	+35	+22	+43.5	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Wheatland, Pa. W9	4.5	+22	+8.5	+32	+19.5	+41	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Youngstown R2, Y1	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.72		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	....	....	....	....
Alton, Ill. L1	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Benwood, W. Va. W10	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Etna, Pa. N2	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Fairless, Pa. N3	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Fontana, Calif. K1	+1.25	+15.75	+0.75	+15.25	0.75	+15.5	0.75	+15.5	+9.75	+26.5	+9.75	+26.5
Indiana Harbor, Ind. Y1	10.75	+3.75	11.25	+3.25	12.75	+3.5	12.25	+3.5	2.25	+14.5	2.25	+14.5
Lorain, O. N3	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	....	....	....	....
Sharon, Pa. M6	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	....	....	....	....
Sparrows Pt., Md. B2	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Wheatland, Pa. W9	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Youngstown R2, Y1	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5

*Galvanized pipe discounts based on current price of zinc (10.00c, East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	—Rerolling— Ingot	Slabs	Forging Billets	H.R. Strip	H.R. Rods; C.F. Wire	Bars; Structural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
201	22.00	27.00	....	36.00	40.00	42.00	39.25	48.50	45.00
202	23.75	30.25	36.50	39.00	40.75	43.00	40.00	49.25	49.25
301	23.25	28.00	37.25	37.25	42.00	44.25	41.25	51.25	47.50
302	25.25	31.50	38.00	40.50	42.75	45.00	42.25	52.00	52.00
302B	25.50	32.75	40.75	45.75	45.00	47.25	44.50	57.00	57.00
303	....	32.00	41.00	46.00	45.50	48.00	45.00	56.75	56.75
304	27.00	33.25	40.50	44.25	45.25	47.75	45.75	55.00	55.00
304L	....	....	48.25	51.50	53.00	55.50	53.50	63.25	63.25
305	28.50	36.75	42.50	47.50	45.25	47.75	46.25	58.75	58.75
308	30.75	38.25	47.25	50.25	52.75	55.75	55.25	63.00	63.00
309	39.75	49.50	57.75	64.50	63.75	67.00	66.00	80.50	80.50
310	49.75	61.50	78.00	84.25	86.50	91.00	87.75	96.75	96.75
314	....	....	77.50	....	86.50	91.00	87.75	99.00	104.25
316	39.75	49.50	62.25	69.25	69.25	73.00	71.75	80.75	80.75
316L	....	55.50	70.00	76.50	77.00	80.75	79.50	89.25	89.25
317	48.00	60.00	76.75	88.25	86.25	90.75	88.50	101.00	101.00
321	32.25	40.00	47.00	53.50	52.50	55.50	54.75	65.50	65.50
330	....	....	118.75	....	132.00	138.50	135.50	149.25	149.25
18-8 CbTa	37.00	46.50	55.75	63.50	61.50	64.75	64.75	79.25	79.25
403	....	....	28.25	....	32.00	33.75	30.00	40.25	40.25
405	19.50	25.50	29.75	36.00	33.50	35.25	32.50	46.75	46.75
410	16.75	21.50	28.25	31.00	32.00	33.75	30.00	40.25	40.25
416	....	....	28.75	....	32.50	34.25	31.25	48.25	48.25
420	26.00	33.50	34.25	41.75	39.25	41.25	40.25	62.00	62.00
430	17.00	21.75	28.75	32.00	32.50	34.25	31.00	40.75	40.75
430F	....	....	29.50	....	33.00	34.75	31.75	51.75	51.75
431	....	28.75	37.75	....	42.00	44.25	41.00	56.00	56.00
446	....	....	39.25	59.00	44.25	46.50	42.75	70.00	70.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Carpenter Steel Co. of New England; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Stainless & Strip Div., Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Company Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel Div., Copperweld Steel Co.; Superior Tube Co.; Swepco Tube Co.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulbrich Stainless Steel Inc.; U. S. Steel Corp.; Universal Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel Co., subsidiary of Allegheny Ludlum Steel Corp.; Washington Steel Corp.

Clad Steel

	Plates 5%	Plates Carbon Base 10%	Plates Carbon Base 15%	Plates Carbon Base 20%	Sheets Carbon Base 20%
Stainless					
302	....	....	....	....	37.50
304	26.05	28.80	31.55	34.30	39.75
304L	30.50	33.75	36.95	40.15	....
316	38.20	42.20	46.25	50.25	58.25
316L	42.30	46.75	51.20	55.65	....
316 Cb	49.90	55.15	60.40	65.65	....
321	31.20	34.50	37.75	41.05	47.25
347	38.90	40.80	44.65	48.55	57.00
405	22.25	24.60	26.90	29.25	....
410	20.55	22.70	24.85	27.00	....
430	21.20	23.45	25.65	27.90	....
Inconel	48.90	59.55	70.15	80.85	....
Nickel	41.65	51.95	62.30	72.70	....
Nickel, Low Carbon	41.95	52.60	63.30	74.15	....
Monel	43.35	53.55	63.80	74.05	....

	Strip, Carbon Base —Cold Rolled— 10%	Both Sides
Copper*	34.75	40.65

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22 Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Reg. Carbon (W-1)	0.330	W-Cr Hot Work (H-12)	0.530
Spec. Carbon (W-1)	0.385	V-Cr Hot Work (H-13)	0.550
Oil Hardening (O-1)	0.505	W Hot Wk. (H-21)	1.425-1.44
V-Cr Hot Work (H-11)	0.505	Hi-Carbon-Cr (D-11)	0.955

Grade by Analysis (%) W	Cr	V	Co	Mo	AISI Designation	$ per lb
18	4	1	....	....	T-1	1.840
18	4	2	....	....	T-2	2.005
13.5	4	3	....	....	T-3	2.105
18.25	4.25	1	4.75	....	T-4	2.545
18	4	2	9	....	T-5	2.915
20.25	4.25	1.6	12.25	....	T-6	4.330
13.75	3.75	2	5	....	T-8	2.485
1.5	4	1	....	8.5	M-1	1.200
6.4	4.5	1.9	....	5	M-2	1.345
6	4	3	....	6	M-3	1.590

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
Birmingham R2	62.00	62.50‡	....	....
Birmingham U6	....	62.50‡	66.50	....
Woodward,Ala. W15	62.00**	62.50‡	66.50	....
Cincinnati, deld.	....	70.20	....	....
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N.Tonawanda,N.Y. T9	....	66.50	67.00	67.50
Tonawanda,N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	....
Rochester,N.Y., deld.	69.02	69.52	70.02	....
Syracuse,N.Y., deld.	70.12	70.62	71.12	....
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S.Chicago,Ill. R2	66.00	66.50	66.50	67.00
S.Chicago,Ill. W14	66.00	....	66.50	67.00
Milwaukee, deld.	69.02	69.52	69.52	70.02
Muskegon,Mich., deld	....	74.52	74.52	....
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron,Ohio, deld.	69.52	70.02	70.02	70.52
Mid-Atlantic District				
Birdsboro,Pa. B10	68.00	68.50	69.00	69.50
Chester,Pa. P4	68.00	68.50	69.00	....
Swedeland,Pa. A3	68.00	68.50	69.00	69.50
New York, deld.	....	75.50	76.00	....
Newark,N.J., deld.	72.69	73.19	73.69	74.19
Philadelphia, deld.	70.41	70.91	71.41	71.99
Troy,N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
NevilleIsland,Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48
McKeesRocks,Pa., deld.	....	67.60	67.60	68.13
Lawrenceville,Homestead, Wilmerding,Monaca,Pa., deld.	....	68.26	68.26	68.79
Verona,Trafford,Pa., deld.	68.29	68.82	68.82	69.35
Brackenridge,Pa., deld.	68.60	69.10	69.10	69.63
Midland,Pa. C18	66.00	....	....	....
Youngstown District				
Hubbard,Ohio Y1	....	....	66.50	....
Sharpsville,Pa. S6	66.00	....	66.50	67.00
Youngstown Y1	....	....	66.50	67.00
Mansfield,Ohio, deld.	71.30	....	71.80	72.30
Duluth I-3	66.00	66.50	66.50	67.00
Erie,Pa. I-3	66.00	66.50	66.50	67.00
Everett,Mass. E1	67.50	68.00	68.50	....
Fontana,Calif. K1	75.00	75.50	....	....
Geneva,Utah C11	66.00	66.50	....	....
GraniteCity,Ill. G4	67.90	68.40	68.90	....
Ironton,Utah C11	66.00	66.50	....	....
Minnequa,Colo. C10	68.00	68.50	69.00	....
Rockwood,Tenn. T3	....	62.50‡	66.50	....
Toledo,Ohio I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.94	73.44	....	....

**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.
‡Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% and $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson,Ohio I-3, J1	$78.00
Buffalo H1	79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

CalvertCity,Ky. P15	$99.00
NiagaraFalls,N.Y. P15	99.00
Keokuk,Iowa Open-hearth & Fdry, $9 freight allowed K2	103.50
Keokuk,Iowa O.H. & Fdry, 12½ lb piglets, 16% Si, max fr'gt allowed up to $9, K2	106.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$78.50
Rockwood,Tenn. T3 (Phos. 0.035% max)	78.50
Troy,N.Y. R2 (Phos. 0.035% max)	73.00
Philadelphia, deld.	81.67
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
NevilleIsland,Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00

Steel Service Center Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Denver, Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Birmingham, Chattanooga, Houston, Seattle, no charge.

	SHEETS				STRIP	BARS			Standard	PLATES	
	Hot-Rolled	Cold-Rolled	Gal. 10 Ga.†	Stainless Type 302	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140†‡[5]	Structural Shapes	Carbon	Floor
Atlanta	8.59§	9.86§	10.13	....	8.91	9.39	13.24 #	....	9.40	9.29	11.21
Baltimore	8.00	8.90	10.32	....	8.70	8.65	12.33 #	15.18	8.50	8.65	9.75
Birmingham	8.18	9.45	10.46	....	8.51	8.99	....	....	8.64	8.89	10.99
Boston	9.31	10.40	11.39	53.50	9.73	10.11	13.39 #	15.71	10.01	10.02	11.87
Buffalo	8.25	9.00	11.07	55.98	8.75	9.15	11.45 #	15.40	9.25	9.20	10.75
Chattanooga	8.35	9.69	9.65	....	8.40	8.77	10.46	....	8.88	8.80	10.66
Chicago	8.25	9.45	10.45	53.00	8.51	8.99	9.15	15.05	9.15	8.89	10.20
Cincinnati	8.43	9.51	10.50	52.43	8.83	9.31	11.53 #	15.37	9.56	9.27	10.53
Cleveland	8.36	9.54	10.20	52.33	8.63	9.10	11.25 #	15.16	9.39	9.13	10.44
Dallas	8.80	9.30	....	....	8.85	8.80	....	....	8.75	9.15	10.40
Denver	9.40	11.84	12.94	....	9.43	9.80	11.19	....	9.84	9.76	11.08
Detroit	8.51	9.71	10.81	56.50	8.88	9.30	9.51	15.33	9.56	9.26	10.46
Erie, Pa.	8.20	9.45	9.95[10]	....	8.60	9.10	11.25	....	9.35	9.10	10.60
Houston	8.40	8.90	10.29	52.00	8.45	8.40	11.60	15.75	8.35	8.75	10.10
Jackson, Miss.	8.52	9.79	....	....	8.57	8.94	10.68	....	8.97	8.90	10.74
Los Angeles	8.70[2]	10.80[2]	12.15[2]	57.60	9.15	9.10[2]	12.95[2]	16.35	9.00[2]	9.10[2]	11.30[2]
Memphis, Tenn.	8.55	9.80	....	....	8.84	9.32	11.96 #	....	9.33	9.22	10.86
Milwaukee	8.39	9.59	10.59	....	8.65	9.13	9.39	15.19	9.22	9.05	10.34
Moline, Ill.	8.55	9.80	10.45	....	8.58	8.95	9.15	....	8.99	8.91	....
New York	8.87	10.13	10.56	53.08	9.64	9.99	13.25 #	15.50	9.74	9.77	11.05
Norfolk, Va.	8.40	....	....	....	9.10	9.10	12.00	....	9.40	8.85	10.35
Philadelphia	8.00	9.25	11.17	52.69	8.70	8.65	11.50	15.48	8.50	8.75	9.75**
Pittsburgh	8.35	9.55	10.85	52.00	8.61	8.99	11.25 #	15.05	9.00	8.89	10.20
Richmond, Va.	8.40	....	10.40	....	9.10	9.00	....	....	9.40	8.85	10.35
St. Louis	8.63	9.83	10.83	....	8.89	9.37	9.78	15.43	9.48	9.27	10.58
St. Paul	8.79	10.04	10.71	....	8.84	9.21	9.86	....	9.38	9.30	10.49
San Francisco	9.65	11.10	11.00	55.10	9.75	10.15	13.00	16.00	9.85	10.00	12.00
Seattle	8.70	10.30[2]	10.95[2]	55.02	8.75	8.85	14.70	16.80[3]	8.55	8.45	10.85
South'ton, Conn.	9.07	10.33	10.71	....	9.48	9.74	....	....	9.57	9.57	10.91
Spokane	9.95	11.15	12.20	57.38	10.00	10.10	14.70	16.80	9.80	9.70	12.10
Washington	8.88	....	....	....	9.36	9.56	10.94	....	9.79	9.26	10.74

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **⅛ in. and heavier; ††as annealed; ‡‡¾ in. to 4 in. wide, inclusive; #net price, 1 in. round C-1018.

Base quantities, 2000 to 4999 lb except as noted: cold-finished bars, 2000 lb and over except in Seattle, 2000 to 3999 lb; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Seattle, 30,000 lb and over; [2]—30,000 lb; [3]—1000 to 4999 lb; [5]—1000 to 1999 lb; [10]—2000 lb and over.

Refractories

Fire Clay Brick (per 1000)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchens, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Winburne, Snow Shoe, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parrall, Portsmouth, Ohio, Ottawa, Ill., Stevens Pottery, Ga., $140; Salina, Pa., $145; Niles, Ohio, $138; Cutler, Utah, $165.

Super-Duty: Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St. Louis, $185; Stevens Pottery, Ga., $195; Cutler, Utah, $233.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, Ohio, Hawstone, Pa., $158; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., $163; E. Chicago, Ind., Joliet, Rockdale, Ill. $168; Lehigh, Utah, $175; Los Angeles, $180.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., $157; Morrisville, Hays, Latrobe, Pa., $168; E. Chicago, Ind., $167; Curtner, Calif., $182.

Semisilica Brick (per 1000)

Clearfield, Pa., $140; Philadelphia, $137; Woodbridge, N. J., $135.

Ladle Brick (per 1000)

Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, $96.75; Clearfield, Pa., Portsmouth, Ohio, $102.

High-Alumina Brick (per 1000)

50 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $235; Danville, Ill., $253; Philadelphia, Clearfield, Pa., $230; Orivston, Snow hoe, Pa., $260.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $295; Danville, Ill., $313; Clearfield, Orviston, Snow Shoe, Pa., $320; Philadelphia, $310.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $335; Danville, Ill., $353; Clearfield, Orviston, Snow Shoe, Pa., $360; Philadelphia, $350.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $188.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $310.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $234.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Narlo, Ohio, $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.60.

Magnesite (per net ton)

Domestic, dead-burned, ½ in. grains with fines: Chewelah, Wash., Luning, Nev., $46; ⅝ in. grains with fines: Baltimore, $73.

Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $37-$41; 70%, $36-$40; 60%, $33-$36.50. Imported, net ton, f.o.b. cars point of entry, duty paid, metallurgical grade: European, $29-$31, contract; Mexican, all rail, duty paid, $25; barge, Brownsville, Tex., $26.

Ores

Lake Superior Iron Ore

(Prices effective for the 1958 shipping season, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Mesabi bessemer	$11.60
Mesabi nonbessemer	11.45
Old Range bessemer	11.85
Old Range nonbessemer	11.70
Open-hearth lump	12.70
High phos	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 30, 1957, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, foundry and basic 62-64% concentrates	18.00-19.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65%	25.00
N. African hematite (spot)	nom
Brazilian iron ore, 68.5%	26.00

Tungsten Ore

Net ton, unit

Foreign wolframite, good commercial quality	$8.00-8.50*
Domestic, concentrates f.o.b. milling points	17.00-22.00

*Before duty.

Manganese Ore

Mn 46-48%, Indian (export tax included) $1.10 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; other than Indian, nominal; contracts by negotiation.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian	
48% 3:1	$42.00-44.00
48% 2.8:1	38.00-40.00
48% no ratio	29.00-31.00
South African Transvaal	
44% no ratio	22.00-23.00
48% no ratio	29.00-31.00
Turkish	
48% 3:1	51.00-55.00
Domestic	
Rail nearest seller	
18% 3:1	39.00

Molybdenum

Sulfide concentrate, per lb of Mo content, mines, unpacked	$1.23

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard

50-55%	$2.25-2.40
60-65%	2.50-3.10

Vanadium Ore

Cents per lb V_2O_5

Domestic	31.00

Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

	Cents
Sponge Iron, Swedish: deld. east of Mississippi River, ocean bags 23,00 lb and over	10.50
F.o.b. Riverton or Camden, N. J., west of Mississippi River.	9.50
Sponge Iron, Domestic, 99 + % Fe: Deld. east of Mississippi River. 23,000 lb and over	10.50
Electrolytic Iron. Melting stock, 99.87% Fe, irregular fragments of ¼ in. x 1.3 in.	28.75
(in contract lots of 240 tons price is 22.75c)	
Annealed, 99.5% Fe.	36.50
Unannealed (99 + % Fe)	36.00
Unannealed (99 + % Fe) (minus 325 mesh)	59.00
Powder Flakes (minus 16, plus 100 mesh)	29.00
Carbonyl Iron: 98.1-99.9%, 3 to 20 microns, depending on grade, 93.00-290.00 in standard 200-lb containers; all minus 200 mesh.	
Aluminum: Atomized, 500-lb drum, freight allowed Carlots	38.50
Ton lots	40.50
Antimony, 500-lb lots	42.00*
Brass, 5000-lb lots	31.00-46.70†
Bronze, 5000-lb lots	47.20-51.50†
Copper: Electrolytic	14.75*
Reduced	14.75*
Lead	7.50*
Manganese: Minus 35 mesh	64.00
Minus 100 mesh	70.00
Minus 200 mesh	75.00
Nickel, unannealed	74.00
Nickel-Silver, 5000-lb lots	48.80-53.50†
Phosphor-Copper, 5000-lb lots	59.30
Copper (atomized) 5000-lb lots	39.80-48.30†
Silicon	47.50
Solder	7.00*
Stainless Steel, 304	$1.07
Stainless Steel, 316	$1.26
Tin	14.00*
Zinc, 5000-lb lots	17.50-30.70†
Tungsten:	Dollars
Melting grade, 99% 60 to 200 mesh, nominal: 1000 lb and over	3.15
Less than 1000 lb	3.30
Chromium, electrolytic 99.8% Cr min metallic basis	5.00

*Plus cost of metal. †Depending on composition. ‡Depending on mesh.

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE

Inches Diam	Inches Length	Per 100 lb
2	24	$60.75
2½	30	39.25
3	40	37.00
4	40	35.00
5¼	40	34.75
6	60	31.50
7	60	28.25
8, 9, 10	60	28.00
12	72	26.75
14	60	26.75
16	72	25.75
17	60	26.25
18	72	26.25
20	72	25.25
24	84	26.00

CARBON

8	60	13.30
10	60	13.00
12	60	12.95
14	60	12.85
14	72	11.95
17	60	11.85
17	72	11.40
20	84	11.40
20	90	11.00
24	72, 84	11.25
24	96	10.95
30	84	11.05
40, 35	110	10.70
40	100	10.70

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, Pa., furnace	$14.75-15.75
Connellsville, Pa., foundry	18.00-18.50

Oven Foundry Coke

Birmingham, ovens	$28.85
Cincinnati, deld.	31.84
Buffalo, ovens	30.50
Camden, N. J., ovens	29.50
Detroit, ovens	30.50
Pontiac, Mich., deld.	32.45
Saginaw, Mich., deld.	34.03
Erie, Pa., ovens	30.50
Everett, Mass., ovens: New England, deld.	31.55*
Indianapolis, ovens	29.75
Ironton, Ohio, ovens	29.00
Cincinnati, deld.	31.84
Kearny, N. J., ovens	29.75
Milwaukee, ovens	30.50
Neville Island (Pittsburgh), Pa., ovens	29.25
Painesville, Ohio, ovens	30.50
Cleveland, deld.	32.69
Philadelphia, ovens	29.50
St. Louis, ovens	31.50
St. Paul, ovens	29.75
Chicago, deld.	33.29
Swedeland, Pa., ovens	29.50
Terre Haute, Ind., ovens	29.75

*Ore within $5.15 freight zone from works.

Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries.)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305	$5.10	$5.10	$5.00	$5.45
Bar Size Angles	5.05	5.05	5.00	5.38
Structural Angles	5.05	5.05	5.05	5.38
I-Beams	5.11	5.11	5.11	5.45
Channels	5.11	5.11	5.11	5.45
Plates (basic bessemer)	6.62	6.62	6.62	6.94
Sheets, H.R.	8.20	8.20	8.20	8.50
Sheets, C.R. (drawing quality)	8.75	8.75	8.75	9.12
Furring Channels, C.R., 1000 ft, ⅜ x 0.30 lb per ft	25.71	25.59	25.59	26.46
Barbed Wire (†)	6.65	6.65	6.65	7.00
Merchant Bars	5.40	5.40	5.25	5.90
Hot-Rolled Bands	7.15	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5	5.05	5.18	5.00	5.35
Wire Rods, O.H. Cold Heading Quality No. 5	5.80	5.93	5.75	6.05
Bright Common Wire Nails (§)	8.02	8.02	7.92	8.20

†Per 82 lb net reel. §Per 100-lb kegs, 20d nails and heavier.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzene	36.00
Toluene, one deg	29.50
Industrial xylene	32.00-34.00

Per ton, bulk, ovens

Ammonium sulfate	$32.00-34.00

Cents per pound, producing point

Phenol: Grade 1, 17.50; Grade 2-3, 15.50; Grade 4, 17.50; Grade 5, 16.50; Grade 6, 14.50.

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton, Palmerton, Neville Island, Pa. 21-23% Mn, $105; 19-21% Mn, 1-3% Si, $102.50; 16-19% Mn, $100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx) base price per net ton, $245, Johnstown, Duquesne, Sheridan, Neville Island, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively. (Mn 79-81%). Lump $253 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2 60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-95%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.5% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn, packed, carload 26.8c, ton lot 28.4c, less ton 29.6c. Delivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2%). Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lot 49.25c. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carload, 34c; 2000 lb to min carload, 36c; less ton, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Carload, lump, bulk 1.50% C grade, 18-20% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 15-17%, deduct 0.2% from above prices. For 3% C grade, Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton to 300 lb, $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton to 300 lb $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract min, c.l. $240 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis. Spot, $245.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4%). Contract c.l. $290 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed. Spot, $295.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l. lump, bulk 28.75c per lb of contained Cr; c.l. packed 30.30c, ton lot 32.05c; less ton 33.45c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Ton lot, add 3.5c; less ton, add 5.2c. Delivered.

Cr 67-71%, carload, lump, bulk, C 0.02% max, 41.00c per lb contained Cr; 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max, 38.25c; 0.50% max, 38.00c; 1.0% max, 37.75c; 1.5% max, 37.50c; 2.0% max, 37.25c. Ton lot, add 3.4c; less ton lot, add 5.1c. Delivered.

Foundry Ferrochrome, High-Carbon: (Cr 61-66%, C 5-7%, Si 7-10%). Contract, c.l., 2 in. x D, bulk 30.8c per lb of contained Cr. Packed, c.l. 32.4c, ton 34.2c, less ton 35.7c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload packed, 8M x D, 21.25c per lb of alloy, ton lot 22.50c; less ton lot 23.70c. Delivered. Spot, add 0.25c.

Ferrochrome-Silicon: Cr 39-41%, Si 42-45%, C 0.05% max or Cr 33-36%, Si 45-48%, C 0.05% max. Carload, lump, bulk, 3" x down and 2" x down, 28.25c per lb contained Cr, 14.60c per lb contained Si. 0.75" x down 29.40c per lb contained Cr, 14.60c per lb contained Si.

Chromium Metal, Electrolytic: Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed 2" x D plate (about ⅛" thick) $1.29 per lb, ton lot $1.31, less ton lot $1.33. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max., C 0.5% max) $3.30. **High Speed Grade:** (V 50-55%, or 70-75%, Si 1.50% max, C 0.20% max) $3.40.

Grainal: Vanadium Grainal No. 1 $1.05 per lb; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract less carload lot, packed, $1.38 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

50% Ferrosilicon: Contract, carload, lump, bulk, 14.6c per lb of contained Si. Packed c.l. 17.1c, ton lot 18.55c, less ton 22.20c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 15.75c per lb contained silicon. Packed, c.l. 17.75c, ton lot 19.55c, less ton 20.9c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 16.9c per lb of contained Si. Packed, c.l. 18.8c, ton lot 20.45c, less ton 21.7c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 20c per lb of contained Si. Packed, c.l. 21.65c, ton lot 23.05c, less ton 24.1c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 1.00% max Fe, 0.07% max Ca). C.l. lump, bulk, 21.5c per lb of Si. Packed, c.l. 23.15c, ton lot 24.45c, less ton 25.45c. Add 0.5c for max 0.03% Ca grade. Add 0.5c for 0.50 Fe grade analyzing min 98.25% min Si.

Alsifer (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.60c per lb of alloy; ton lot, packed, 10.95c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk, 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 27.25c per lb of alloy, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

Carbortam: (B 1 to 2%). Contract, lump, carload $320 per ton, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Contract, carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx 3¾ lb each and containing 2 lb of Cr). Contract, carload, bulk 19.60c per lb of briquet, carload packed in box pallets 19.80c, in bags 20.70c; 3000 lb to c.l. in box pallets 21.00c; 2000 lb to c.l. in bags 21.90c; less than 2000 lb in bags 22.80c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Contract, carload, bulk 14.8c per lb of briquet; c.l., packed, pallets 15c, bags 16c; 3000 lb to c.l., pallets 16.2c; 2000 lb to c.l., bags 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3½ lb and containing 2 lb of Mn and approx ½ lb of Si). Contract, c.l. bulk 15.1c per lb of briquet; c.l. packed, pallets 15.3c; bags 16.3c, 3000 lb to c.l., pallets 16.5c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si and small sizes weighing approx 2½ lb and containing 1 lb of Si). Contract, carload, bulk 8c per lb of briquet; packed, pallets, 8.2c; bags 9.2c; 3000 lb to c.l., pallets 9.8c; 2000 lb to c.l., bags 10.8c; less ton 11.7c. Delivered. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each). $1.41 per lb of Mo contained, f.o.b. Langeloth, Pa.

Titanium Briquets: Ti 98.27%, $1 per lb, f.o.b. Niagara Falls, N. Y.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%). 5000 lb W or more $2.15 per lb (nominal) of contained W. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.4% max). Ton lots 2" x D, $4 per lb of contained Cb; less ton lots $4.05 (nominal). Delivered.

Ferrotantalum Columbium: (Cb 40% approx, Ta 20% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lots 2" x D, $3.80 per lb of contained Cb plus Ta, delivered; less ton lots $3.85 (nominal).

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, c.l. packed ½-in. x 12 M 20.00c per lb of alloy, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 20c per lb of alloy, ton lot 21.15c; less ton lot 22.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.45c per lb of alloy; ton lot 19.95c; less ton lot 21.20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal Fe) Lump, carload, bulk 19.25c. Packed c.l. 20.25c, 2000 lb to c.l. 21.25c; less than 2000 lb 21.75c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $5 for each 1% of P above or below the base). Carload, bulk, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $120 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo, in 200-lb container, f.o.b. Langeloth and Washington, Pa. $1.68 in all sizes except powdered which is $1.74.

Technical Molybdic-Oxide: Per lb of contained Mo, in cans, $1.39; in bags, $1.38, f.o.b. Langeloth and Washington, Pa.

Think carefully: Have you seen this man anywhere around your plant?

His name is WILLIS JOSEPH HAMILTON, and he's

WANTED FOR MURDER

WILLIS JOSEPH HAMILTON is being sought by the FBI for unlawful flight to avoid prosecution for the crime of murder. Hamilton has been employed in foundries and by manufacturers of steel products, and may seek employment or already be employed in such industries.

On June 26, 1953, Hamilton is alleged to have shot and killed one William H. Goolsby in a Cleveland, Ohio, restaurant following an argument over the payment of a check. A complaint was filed before a U.S. Commissioner at Cleveland, Ohio, June 29, 1953, charging Hamilton with a violation of Title 18, U.S. Code, Section 1073, in that he fled from the State of Ohio to avoid prosecution for the crime of murder.

Hamilton uses several aliases: Joe Brown, Thomas Collins, Jimmie Dale, Willie Foster, William Hamilton, Willie Hamilton, John Tabot, Joe Talbert, John Talbert, Joseph J. White, James Williams, John Williams, Joseph Whyte, Joe Whyth.

This fugitive has escaped from confinement on numerous occasions. He reportedly carries a .45 caliber automatic under his left shoulder in a shoulder holster. He reportedly practices drawing this automatic while pretending to reach for cigarets. He reportedly has another automatic pistol in his possession. Accordingly, he should be considered armed and dangerous. Hamilton has been convicted for robbery, highway robbery, armed robbery, and breaking and entering to commit a misdemeanor. Fugitive was born April 16, 1902, St. Augustine, Florida; height, 5'7"; weight, 160 lbs.; build, medium; hair, black graying, kinky; eyes, brown; complexion, medium brown; race, Negro; nationality, American. Occupations, laborer, steel foundry worker, chauffeur. Scars and marks: small cut scar running into and above right eye; small cut scar above left eye; cut scar right edge of nose; 1" scar left side of face near ear. Has several gold-capped teeth, large vaccination outside upper left arm, large cut scar on back of right hand near base of index finger. Hamilton is said to drink to excess and has an ungovernable temper. He is an accomplished trumpet player and occasionally wears a mustache.

Any person having information which might assist in locating this fugitive is requested to immediately notify the Director of the Federal Bureau of Investigation, United States Department of Justice, Washington 25, D. C., or the SPECIAL AGENT IN CHARGE OF THE NEAREST FBI DIVISION. . . . the telephone number is on the first page of your local telephone directory.

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Scrap Slipping in Dull Market

STEEL's composite declines 67 cents to $42.33, largely reflecting weakness in Chicago district. Increased use of hot metal in steel melts an unsettling influence

Scrap Prices, Page 156

Chicago—Prices continued to skid last week. (Leading grades dropped $2 a ton a week earlier.) Early in the week, prices were off another $2 a ton. Cast grades are shaded almost as much.

Some observers had expected a continuing rise in the steelmaking rate would strengthen the scrap market. Others, though, had predicted a softness this month and possibly in November. They reasoned that the mills have good inventories and will buy sparingly.

Furthermore, higher metalworking operations will generate increased quantities of scrap which will find no immediate market.

Four district blast furnaces have been reactivated since Sept. 26 so that the increase in steelmaking is being supported by hot metal rather than scrap.

Philadelphia—While electric furnace bundle prices are stronger at $43, delivered, prices on open hearth grades are unchanged. No. 2 bundles, holding nominally at $26, delivered, have been traded at that level. Short shoveling turnings are easier at $24-$25, delivered, heavy turnings at $34-$35, and malleable at $58. Scrap is coming out more freely, but demand is not brisk.

New York — Apart from higher prices for stainless steel specialties, scrap brokers' buying prices here are unchanged. While there is no real push for the open hearth grades from either domestic or export sources, there is sufficient trading in these and other major steel grades to keep prices in fair balance. Steadiness is also noted in cast scrap.

Demand for stainless scrap is fairly brisk, with 18-8 sheets, clips and solids higher at $185-$190, and 18-8 borings and turnings stronger at $90-$95. Brokers are also paying more for 410 sheets, clips and solids at $60-$65, and for the 430 grades at $85-$90.

Pittsburgh—District steelmaking operations are at the highest level of the year (65 per cent), but major consumers are showing little interest in scrap. Observers describe the market as "stabilized." They expect little change until steel production moves 10 points higher. Railroad lists are weaker. The B. & O. sold its heavy melting scrap for $46.30, about $1.25 less than last month.

Cleveland — Although steelmaking operations are climbing, the Cleveland ingot rate at 78.5 per cent being up 4½ points since a week ago, scrap is not reflecting the betterment in stronger prices. This is due to steelmakers' increased dependence on hot metal. Rising steel production has been accompanied by resumption of operations at numerous blast furnaces. The heavier flow of hot metal is keeping scrap prices in check. Increased generation of industrial scrap also is a retarding influence on the market.

Youngstown—Scrap is not keeping pace with the comeback in the steel industry. Last sales of No. 1 heavy melting were at $45, but no

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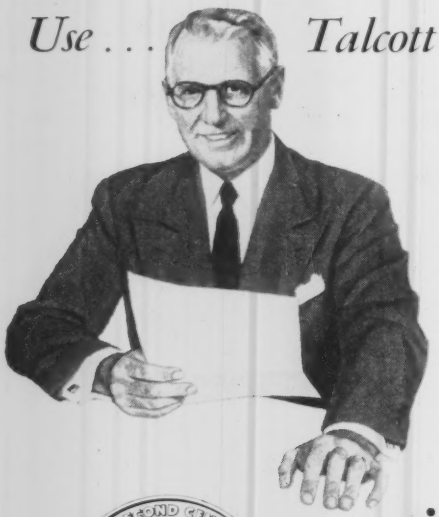

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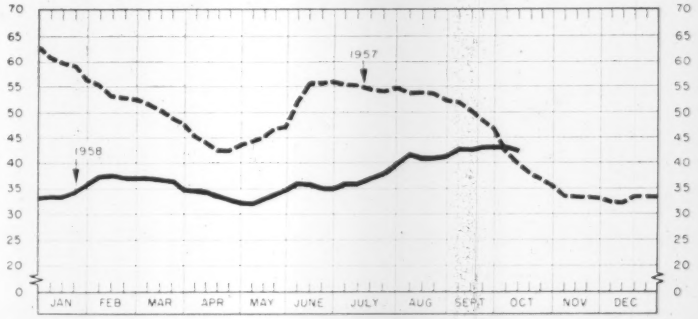
STEELMAKING SCRAP PRICE COMPOSITE

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania—Compiled by STEEL.



Oct. 8 1958	Week Ago	Month Ago	Year Ago	Sept. Avg.
$42.33	$43.00	$42.67	$39.50	$42.87*

*Revised

repeat orders have been received though steelmaking operations have perked up noticeably. Republic Steel Corp. and U. S. Steel Corp. are adding blast furnaces to the active list. Scrap prices are at a level where it's a tossup whether to use more scrap or more pig iron in open-hearth furnace charges.

Buffalo—No. 1 heavy melting scrap advanced $1 a ton on new mill purchases here, and is now quoted $35-$36. A leading consumer paid the same prices for No. 2 heavy melting steel ($30) and No. 2 bundles ($28) that it paid in September. Cast iron scrap is up $1 on new sales, cupola being quoted $44-$45, and No. 1 machinery $48-$49.

Detroit—The market is quiet and no price changes are in prospect this week. Generally, traders anticipate another slight reduction in quotations before an upturn develops in the market at the end of the month. Settlement of the auto labor contracts has made dealers and brokers more optimistic. They think the mills will require more industrial scrap as demand for steel increases.

Cincinnati—Based on district mill buying, No. 1 heavy melting steel has eased back $1 a ton to $37.50-$38.50. The mills are reported buying substantial tonnages. Some other grades have advanced, including heavy breakable cast now quoted $36-$37.

St. Louis—Most open hearth scrap suffered a $1 per ton drop last week, reflecting the depressed situation in the Chicago market. Due to lack of competition—from outside markets—mills here can buy metal at a little lower price. Demand continues steady.

Birmingham — Open hearth scrap is quoted up an average of $3 a ton—the first advance in several weeks—on purchases by two of the larger steel mills here. Electric furnace grades were also traded at higher prices, but the advance in this area was not as much as for open hearth grades.

The cast scrap market has about reached its top and is expected to level off around present prices. Users say it is more economical to buy pig iron.

Interest in the export market is increasing at Gulf and Atlantic ports.

Houston—Prices are steady with the trade filling orders for the Houston mill and some export buying being done.

One exporter has accumulated about 30,000 tons but has no specific plans for loading cargoes this month. Another interest continues to buy metal in Louisiana and plans to load two cargoes at Gulf ports.

The Mexican market is strong. Restrictions on car permits have slowed Texas scrap shipments to border points and considerable tonnage on old orders is unshipped.

San Francisco—Japan has contracted for about 75,000 tons of steel scrap to be shipped over the remainder of this year. Little of it will originate at this port.

Scrap prices are unchanged and no revision is anticipated the rest of this month.

Seattle—The scrap market is inactive. Sales are few, and yard receipts are in only nominal volume. No signs of a revival in the immediate future are in sight, but a better feeling prevails among traders, for no apparent reason.

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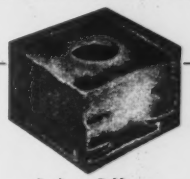

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Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including brokers' commission, as reported to STEEL, Oct. 8, 1958. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

Oct. 8	$42.33
Oct. 1	43.00
Sept. Avg.	42.87*
Oct. 1957	37.37
Oct. 1953	32.75

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania

*Revised.

PITTSBURGH

No. 1 heavy melting	43.00-44.00
No. 2 heavy melting	34.00-35.00
No. 1 dealer bundles	43.00-44.00
No. 2 bundles	31.00-32.00
No. 1 busheling	43.00-44.00
No. 1 factory bundles	47.00-48.00
Machine shop turnings	20.00-21.00
Mixed borings, turnings	20.00-21.00
Short shovel turnings	24.00-25.00
Cast iron borings	24.00-25.00
Cut structurals:	
2 ft and under	*47.00-48.00*
3 ft lengths	*46.00-47.00*
Heavy turnings	41.00-42.00
Punchings & plate scrap	*47.00-48.00*
Electric furnace bundles	*48.00-49.00*

Cast Iron Grades

No. 1 cupola	43.00-44.00
Stove plate	41.00-42.00
Unstripped motor blocks	31.00-32.00
Clean auto cast	39.00-40.00
Drop broken machinery	51.00-52.00

Railroad Scrap

No. 1 R.R. heavy melt.	*47.00-48.00*
Rails, 2 ft and under	57.00-58.00
Rails, 18 in. and under	58.00-59.00
Random rails	54.00-55.00
Railroad specialties	52.00-53.00
Angles, splice bars	52.00-53.00
Rails, rerolling	60.00-61.00

Stainless Steel Scrap

18-8 bundles & solids	225.00-230.00
18-8 turnings	115.00-120.00
430 bundles & solids	*125.00-130.00*
430 turnings	50.00-52.00

CHICAGO

No. 1 hvy melt, indus.	*42.00-43.00*
No. 1 hvy melt, dealer	*40.00-41.00*
No. 2 heavy melting	*34.00-35.00*
No. 1 factory bundles	*45.00-46.00*
No. 1 dealer bundles	*41.00-42.00*
No. 2 bundles	28.00-29.00
No. 1 busheling, indus.	*42.00-43.00*
No. 1 busheling, dealer	*40.00-41.00*
Machine shop turnings	21.00-22.00
Mixed borings, turnings	23.00-24.00
Short shovel turnings	23.00-24.00
Cast iron borings	23.00-24.00
Cut structurals, 3 ft	*46.00-47.00*
Punchings & plate scrap	*47.00-48.00*

Cast Iron Grades

No. 1 cupola	*43.00-44.00*
Stove plate	*41.00-42.00*
Unstripped motor blocks	*36.00-37.00*
Clean auto cast	*48.00-49.00*
Drop broken machinery	*48.00-49.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*45.00-46.00*
R.R. malleable	*54.00-55.00*
Rails, 2 ft and under	*57.00-58.00*
Rails, 18 in. and under	*58.00-59.00*
Angles, splice bars	*53.00-54.00*
Axles	*67.00-68.00*
Rails, rerolling	*63.00-64.00*

Stainless Steel Scrap

18-8 bundles & solids	215.00-225.00
18-8 turnings	120.00-125.00
430 bundles & solids	115.00-120.00
430 turnings	*55.00-60.00*

YOUNGSTOWN

No. 1 heavy melting	43.00-44.00
No. 2 heavy melting	30.00-31.00
No. 1 busheling	43.00-44.00
No. 1 bundles	43.00-44.00
No. 2 bundles	30.00-31.00
Machine shop turnings	15.00-16.00
Short shovel turnings	20.00-21.00
Cast iron borings	20.00-21.00
Low phos.	45.00-46.00
Electric furnace bundles	45.00-46.00

Railroad Scrap

No. 1 R.R. heavy melt.	*45.00-46.00*

CLEVELAND

No. 1 heavy melting	39.50-40.50
No. 2 heavy melting	26.00-27.00
No. 1 factory bundles	44.00-45.00
No. 1 bundles	39.50-40.50
No. 2 bundles	28.00-29.00
No. 1 busheling	39.50-40.50
Machine shop turnings	14.00-15.00
Short shovel turnings	20.00-21.00
Mixed borings, turnings	20.00-21.00
Cast iron borings	20.00-21.00
Cut foundry steel	*40.00-41.00*
Cut structurals, plates 2 ft and under	47.00-48.00
Low phos. punchings & plate	41.00-42.00
Alloy free, short shovel turnings	22.00-23.00
Electric furnace bundles	40.50-41.50

Cast Iron Grades

No. 1 cupola	44.00-45.00
Charging box cast	37.00-38.00
Heavy breakable cast	36.00-37.00
Stove plate	43.00-44.00
Unstripped motor blocks	32.00-33.00
Brake shoes	36.00-37.00
Clean auto cast	49.00-50.00
Burnt cast	33.00-34.00
Drop broken machinery	49.00-50.00

Railroad Scrap

R.R. malleable	60.00-61.00
Rails, 2 ft and under	57.00-58.00
Rails, 18 in. and under	58.00-59.00
Rails, random lengths	52.00-53.00
Cast steel	49.00-50.00
Railroad specialties	50.00-51.00
Uncut tires	43.00-44.00
Angles, splice bars	50.00-51.00
Rails, rerolling	56.00-57.00

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	*200.00-210.00*
18-8 turnings	*110.00-115.00*
430 clips, bundles, solids	*100.00-110.00*
430 turnings	40.00-50.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	*37.00*
No. 2 heavy melting	*35.00*
No. 1 bundles	*39.00*
No. 2 bundles	*28.00*
No. 1 busheling	*39.00*
Machine shop turnings	20.00†
Short shovel turnings	22.00†

Cast Iron Grades

No. 1 cupola	47.00
Charging box cast	*40.00*
Heavy breakable cast	38.00
Unstripped motor blocks	39.00
Clean auto cast	49.00
Stove plate	46.00

Railroad Scrap

No. 1 R.R. heavy melt	45.50
Rails, 18 in. and under	52.00†
Rails, random lengths	47.50
Rails, rerolling	62.25
Angles, splice bars	47.00

BIRMINGHAM

No. 1 heavy melting	*39.00-40.00*
No. 2 heavy melting	*30.00-31.00†*
No. 1 bundles	*39.00-40.00*
No. 2 bundles	*25.00-26.00*
No. 1 busheling	*39.00-40.00*
Cast iron borings	12.00-13.00
Machine shop turnings	24.00-25.00
Short shovel turnings	25.00-26.00
Bars, crops and plates	*46.00-47.00*
Structurals & plates	*45.00-46.00*
Electric furnace bundles	*40.00-41.00*
Electric furnace: 2 ft and under	38.00-39.00
3 ft and under	37.00-38.00

Cast Iron Grades

No. 1 cupola	54.00-55.00
Stove plate	54.00-55.00
Unstripped motor blocks	43.00-44.00
Charging box cast	29.00-30.00
No. 1 wheels	43.00-44.00

Railroad Scrap

No. 1 R.R. heavy melt.	*39.00-40.00*
Rails, 18 in. and under	*51.00-52.00*
Rails, rerolling	59.00-60.00
Rails, random lengths	*48.00-49.00*
Angles, splice bars	*48.00-49.00*

PHILADELPHIA

No. 1 heavy melting	42.00
No. 2 heavy melting	38.00
No. 1 bundles	42.00
No. 2 bundles	26.00
No. 1 busheling	42.00
Electric furnace bundles	*43.00*
Mixed borings, turnings	20.00-21.00
Short shovel turnings	*24.00-25.00*
Machine shop turnings	20.00-21.00
Heavy turnings	*34.00-35.00*
Structurals & plate	44.00-45.00
Couplers, springs, wheels	48.00
Rail crops, 2 ft & under	58.00-60.00

Cast Iron Grades

No. 1 cupola	41.00
Heavy breakable cast	44.00
Malleable	*58.00*
Drop broken machinery	49.00-50.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	33.00-34.00
No. 2 heavy melting	30.00-31.00
No. 1 bundles	33.00-34.00
No. 2 bundles	19.00-20.00
Machine shop turnings	10.00-11.00
Mixed borings, turnings	11.00-12.00
Short shovel turnings	14.00-15.00
Low phos. (structurals & plates)	37.00-38.00

Cast Iron Grades

No. 1 cupola	36.00-37.00
Unstripped motor blocks	28.00-29.00
Heavy breakable	33.00-34.00

Stainless Steel

18-8 sheets, clips, solids	*185.00-190.00*
18-8 borings, turnings	*90.00-95.00*
410 sheets, clips, solids	*60.00-65.00*
430 sheets, clips, solids	*85.00-90.00*

BUFFALO

No. 1 heavy melting	*35.00-36.00*
No. 2 heavy melting	29.00-30.00
No. 1 bundles	*35.00-36.00*
No. 2 bundles	27.00-28.00
No. 1 busheling	*35.00-36.00*
Mixed borings, turnings	17.00-18.00
Machine shop turnings	15.00-16.00
Short shovel turnings	19.00-20.00
Cast iron borings	17.00-18.00
Low phos. structurals and plate, 2 ft and under	43.00-44.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	*44.00-45.00*
No. 1 machinery	*48.00-49.00*

Railroad Scrap

Rails, random lengths	53.00-54.00
Rails, 3 ft and under	59.00-60.00
Railroad specialties	43.00-44.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*37.50-38.50*
No. 2 heavy melting	32.50-33.50
No. 1 bundles	*37.50-38.50*
No. 2 bundles	25.00-26.00
No. 1 busheling	*37.50-38.50*
Machine shop turnings	18.00-19.00
Mixed borings, turnings	*18.00-19.00*
Short shovel turnings	20.00-21.00
Cast iron borings	*18.00-19.00*
Low phos. 18 in.	45.00-46.00

Cast Iron Grades

No. 1 cupola	43.00-44.00
Heavy breakable cast	*36.00-37.00*
Charging box cast	34.00-35.00
Drop broken machinery	47.00-48.00

Railroad Scrap

No. 1 R.R. heavy melt.	44.00-45.00
Rails, 18 in. and under	55.00-56.00
Rails, random lengths	*49.00-50.00*

HOUSTON

(Brokers' buying prices; f.o.b. cars)

No. 1 heavy melting	40.00
No. 2 heavy melting	34.00
No. 1 bundles	40.00
No. 2 bundles	25.00
Machine shop turnings	17.00
Short shovel turnings	20.00
Low phos. plates & structurals	*45.50*

Cast Iron Grades

No. 1 cupola	*47.00*
Heavy breakable	30.00†
Foundry malleable	*42.00*
Unstripped motor blocks	37.00

Railroad Scrap

No. 1 R.R. heavy melt.	38.00

BOSTON

(Brokers' buying prices, f.o.b. shipping point)

No. 1 heavy melting	*29.00-30.00*
No. 2 heavy melting	22.50
No. 1 bundles	*29.00-30.00*
No. 2 bundles	21.00
No. 1 busheling	*29.00-30.00*
Machine shop turnings	*9.00-10.00*
Short shovel turnings	*12.00-13.00*
No. 1 cast	33.00-34.00
Mixed cupola cast	33.00-34.00
No. 1 machinery cast	36.00-38.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	30.00-31.00
No. 2 heavy melting	19.00-20.00
No. 1 bundles	31.00-32.00
No. 2 bundles	18.00-19.00
No. 1 busheling	30.00-31.00
Machine shop turnings	8.00-9.00
Mixed borings, turnings	10.00-11.00
Short shovel turnings	10.00-11.00
Punchings & plate	30.00-31.00

Cast Iron Grades

No. 1 cupola	*39.00-40.00*
Stove plate	27.00-28.00
Charging box cast	27.00-28.00
Heavy breakable	26.00-27.00
Unstripped motor blocks	16.00-17.00
Clean auto cast	*40.00-41.00*

SEATTLE

No. 1 heavy melting	30.00†
No. 2 heavy melting	28.00†
No. 1 bundles	22.00†
No. 2 bundles	20.00†
Machine shop turnings	9.00-10.00†
Mixed borings, turnings	9.00-10.00†
Electric furnace No. 1	38.00†

Cast Iron Grades

No. 1 cupola	31.00†
Heavy breakable cast	28.00†
Unstripped motor blocks	23.00†
Stove plate (f.o.b. plant)	21.00†

LOS ANGELES

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	28.00
No. 2 bundles	17.00
Machine shop turnings	11.00
Shoveling turnings	13.00
Cast iron borings	13.00
Cut structurals and plate 1 ft and under	45.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	39.00

Railroad Scrap

No. 1 R.R. heavy melt.	32.00

SAN FRANCISCO

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	30.00
No. 2 bundles	22.00
Machine shop turnings	15.00
Mixed borings, turnings	15.00
Cast iron borings	15.00
Heavy turnings	15.00
Short shovel turnings	15.00
Cut structurals, 3 ft	40.00

Cast Iron Grades

No. 1 cupola	44.00
Charging box cast	34.00
Stove plate	34.00
Heavy breakable cast	28.00
Unstripped motor blocks	31.00
Clean auto cast	40.00
Drop broken machinery	40.00
No. 1 wheels	34.00

HAMILTON, ONT.

No. 1 heavy melting	30.00
No. 2 heavy melting	26.00
No. 1 bundles	30.00
No. 2 bundles	23.00
Mixed steel scrap	25.00
Mixed borings, turnings	15.00
Busheling, new factory: Prepared	30.00
Unprepared	24.00
Short steel turnings	19.00

Cast Iron Grades‡

No. 1 machinery cast	45.00-50.00

*Brokers' buying price.
†Nominal.
‡F.o.b. Hamilton, Ont.

THE NEW LOGEMANN MODEL 500-PF HIGH SPEED SCRAP PRESS

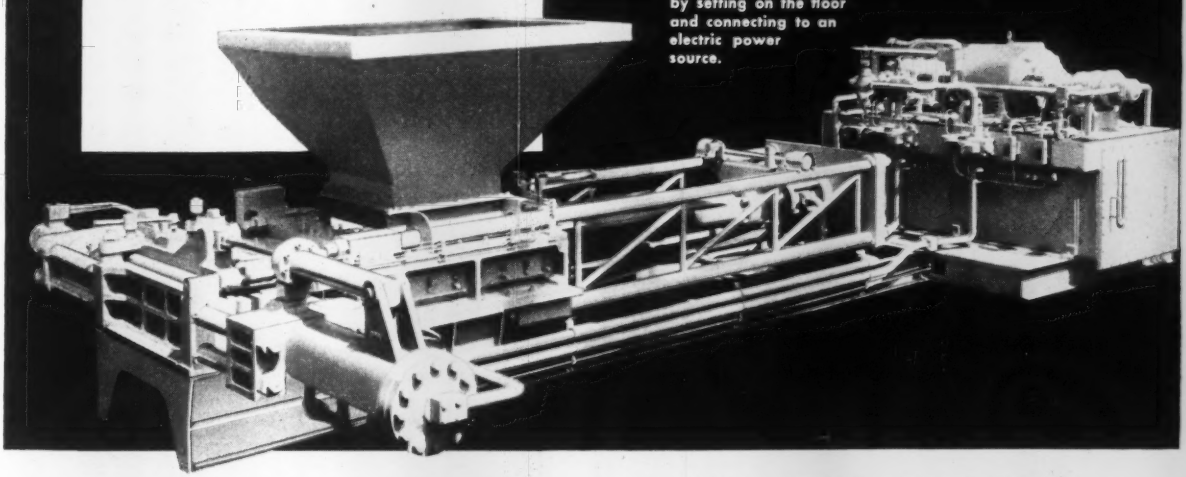
FAST LOADING! FAST BALING! FAST DISCHARGE!

Here is a two-compression, side-ejection press designed for high production — up to 240 bales per hour.

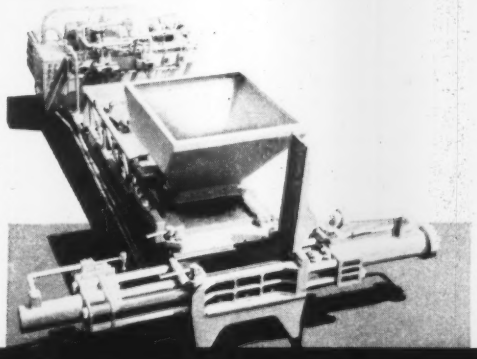
It is able to bale sheet clips, stamping skeletons, wire, cans, steel, copper, brass and aluminum scrap.

No pit required for installation. Can be operated by setting on the floor and connecting to an electric power source.

The **LOGEMANN** Model **500-PF** press is a high-speed, high-density horizontal two compression unit. It is filled from a hopper supermounted above the compression box and discharges the compressed bale through a side opening. The operating cycle is automatic and continuous, or manual at the option of the operator.



BALE SIZE	**6" x 12" x 8" (VARIABLE)**
BALE WEIGHT	**40 LBS. AVERAGE**
PRODUCTION	**UP TO 240 BALES PER HOUR**



Designed for HIGH PRODUCTION

Here is a new high speed scrap press . . . geared for high production and extra baling profits for you. Famous "engineered" features, proved through actual operation, are built into this press to give you constant, uninterrupted service. It's a top-loading side-ejection press that can handle a variety of scrap. Write for the new Bulletin No. 220; it will give you complete information concerning design, pumping unit, valve assembly and accessory equipment. When making your inquiries please state the nature of your scrap and the tonnage desired.

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Fourth Quarter Looks Good

Metal sales will climb to their highest level of the year. Look for some stepped-up production and further price advances in copper, zinc, and lead

Nonferrous Metal Prices, Pages 160 & 161

FOURTH QUARTER sales of most nonferrous metals will be the best of the year. But industry officials are keeping their fingers crossed. Their hopes were high for the fourth quarter last year.

Most metalmen don't expect to be disappointed this year. Sales have been climbing steadily since early summer and were the best of the year in September for most metals. The improvement has carried over into October.

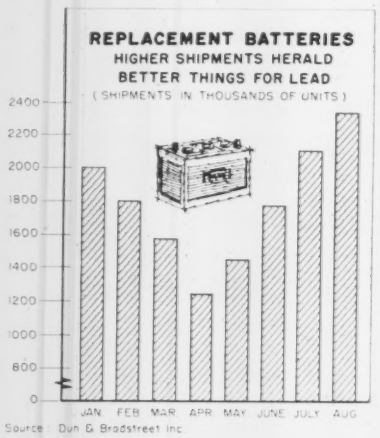
Price Explosion—Producers ushered in the fourth quarter with a bang by hiking prices of three metals by 0.5 cent a pound on Oct. 2. Lead was upped to 12 cents a pound, New York basis; prime western zinc to 10.50 cents, East St. Louis, Ill. (the first advance since July 1, 1957); and custom smelted copper to 27 cents. Three reasons: 1. Better business. 2 Imposition of lead and zinc quotas. 3. Strikes at several copper mines.

The fourth quarter gives every indication of being a period of activity, both in demand and price changes. High hopes are pinned on a resurgence in Detroit—so far ordering has been slow. Here's the outlook for four major metals.

Lead and Zinc—These two metals have been playing a game of tag during the last two weeks. First one, then the other, goes up in price. The latest development was a 0.5 cent a pound hike in zinc on Oct. 8, followed almost immediately by a similar move for lead. And nobody was willing to say that that would end the game. There was a strong feeling late last week that both metals could move up again.

For zinc, the move was spurred by the release of September's statistics by the American Zinc Institute. Domestic shipments rose to the year's high point of 76,905 tons and stocks dropped by more than 13,000 tons. Galvanizing, which has been the mainstay of the zinc market, is expected to get even stronger. Special high grade sales to diecasters have improved.

Third quarter zinc sales were better than those for either of the first two periods, and producers are confident the fourth quarter will be far and away the best of the year. This probably will bring about an increase in domestic production in the next three months, especially if the government steps up the barter program.



Source: Dun & Bradstreet Inc.

Demand for lead has been running at the highest level of the year with the construction and storage battery industries (see chart) taking the largest tonnages. Look for fourth quarter sales to rise and a possible increase in domestic production.

Copper — Sales, on the upswing since early summer, are now riding at the highest level of the year. Third quarter business bested the levels of the other two periods. And the improvement is expected to continue.

Along with the rise in demand, there's less metal flowing into the world market. Strikes have shut down 450,000 tons of capacity (annual) in Africa, 100,000 tons in Canada, and 60,000 tons in the U. S. The total, 610,000 tons, amounts to about 20 per cent of the world's annual output.

The strikes have helped to firm the world price. The London price is up to nearly 28 cents a pound—custom smelters quote 27.5 cents a pound, 1 cent over the primary.

Look for an early hike in the custom smelter quotation. Also expect a rise in primary copper soon.

Aluminum—Third quarter sales were above those of the previous two quarters. Producers expect the fourth quarter to be the best of the year. Markets currently rising include construction, foil, electrical, chemical and petroleum, and consumer durable goods. Sales to Detroit are still a little slow, but orders are expected to pick up.

The industry is currently producing at an annual rate of 1,626,000 tons. Look for this figure to rise as new potlines are brought in and as idle capacity is reactivated.

NONFERROUS PRICE RECORD

	Oct. 8 Price	Last Change	Previous Price	Sept. Avg	Aug. Avg	Oct., 1957 Avg
Aluminum	24.70	Aug. 1, 1958	24.00	24.700	24.700	26.000
Copper	26.50-27.50	Oct. 8, 1958	26.50-27.00	26.428	26.510	26.361
Lead	12.30	Oct. 8, 1958	11.80	10.730	10.646	13.504
Magnesium	35.25	Aug. 13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec. 6, 1956	64.50	74.000	74.000	74.000
Tin	96.50	Oct. 8, 1958	96.75	94.120	94.995	91.843
Zinc	11.00	Oct. 8, 1958	10.50	10.000	10.000	10.000

Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig, 99.8%, Velasco, Tex.

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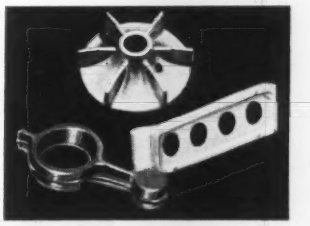

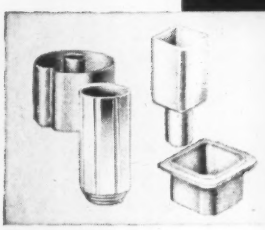

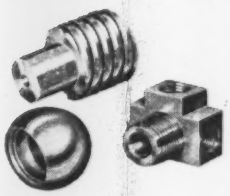

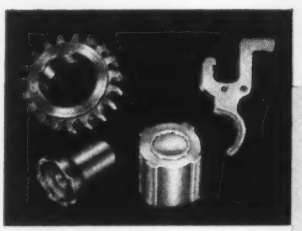

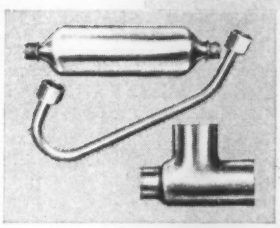

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The Mueller Brass Co. maintains one of the largest automatic screw machine departments in the country, specializing in the manufacture of non-ferrous parts . . . completely equipped to perform secondary operations.

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Precision ferrous and non-ferrous powder metal parts are available from Mueller Brass Co. through its subsidiary, The American Sinteel Corporation.

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The Mueller Brass Co. has a modern foundry equipped to produce quality brass and bronze castings to your specifications.

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MUELLER BRASS CO. PORT HURON 26, MICHIGAN

Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs 24.70; ingots, 26.80, 30,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 28.60; No. 43, 28.40; No. 195 29.40; No. 214, 30.20; No. 356, 28.60; 30 or 40 lb ingots.

Antimony: R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 23.50-24.50, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.25% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per ton, ton lots.

Cadmium: Sticks and bars, $1.45 per lb deld.

Cobalt: 97.99% $2.00 per lb for 550-lb keg; $2.02 per lb for 100 lb case; $2.07 per lb under 100 lb.

Columbium: Powder, $55-85 per lb, nom.

Copper: Electrolytic, 26.50 deld.; custom smelters, 27.50; lake, 26.50 deld.; fire refined, 26.25 deld.

Germanium: First reduction, $179.17-197.31 per lb; intrinsic grade, $197.31-220 per lb, depending on quantity.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $70-80 nom. per troy oz.

Lead: Common, 12.30; chemical, 12.40; corroding, 12.40, St. Louis, New York basis, add 0.20.

Lithium: 98 + %, 50-100 lb, cups or ingots, $12; rod, $15; shot or wire, $16. 100-500 lb, cups or ingots, $10.50; rod, $14; shot or wire, $15, f.o.b. Minneapolis.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco Tex.; 12 in. sticks, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $238-240 per 76-lb flask.

Molybdenum: Unalloyed turned extrusions, 3.75-5.75 in. round, $9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty, New York basis, add 1.01. Nickel oxide sinter at Buffalo, New York, or other established U. S. points of entry, contained nickel, 69.60.

Osmium: $70-100 per troy oz nom.

Palladium: $15-17 per troy oz.

Platinum: $57-60 per troy oz from refineries.

Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $118-125 per troy oz.

Ruthenium: $45-55 per troy oz.

Selenium: $7.00 per lb, commercial grade.

Silver: Open market, 89.125 per troy oz.

Sodium: 17.00 c.l.; 19.00-19.50 l.c.l.

Tantalum: Rod, $60 per lb; sheet, $55 per lb.

Tellurium: $1.65-1.85 per lb.

Thallium: $7.50 per lb.

Tin: Straits, N. Y., spot and prompt, 96.50.

Titanium: Sponge, 99.3 + % grade A-1, ductile (0.3% Fe max.), $1.82-2.05; grade A-2 (0.5% Fe max.), $1.70-1.85 per lb.

Tungsten: Powder, 89.8%, carbon reduced, 1000-lb lots, $3.15 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99 + % hydrogen reduced, $3.30-3.80.

Zinc: Prime Western, 11.00; brass special, 11.25; intermediate, 11.50, East St. Louis, freight allowed over 0.50 per lb. New York basis, add 0.50. High grade, 12.00; special high grade, 12.25 deld. Diecasting alloy ingot No. 3, 13.50; No. 2, 13.75; No. 5, 13.50 deld.

Zirconium: Reactor grade sponge, 100 lb or less, $7 per lb; 100-500 lb, $6.50 per lb; over 500 lb, $6 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 23.50-25.25; No. 12 foundry alloy (No. 2 grade), 21.50-22.00; 5% silicon alloy, 0.60 Cu max., 24.75-25.00; 13 alloy 0.60 Cu max., 24.75-25.00; 195 alloy, 25.25-26.00; 108 alloy, 22.25-22.50. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 22.75; grade 2, 21.50; grade 3, 20.50; grade 4, 18.00.

Brass Ingot: Red brass, No. 115, 28.00; tin bronze, No. 225, 37.00; No. 245, 31.75; high-leaded tin bronze, No. 305, 32.25; No. 1 yellow, No. 405, 23.50; manganese bronze, No. 421, 25.25.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.845, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.825, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 20,000-lb lots, 31.855; l.c.l., 32.48. Weatherproof, 20,000-lb lots, 33.66, l.c.l., 34.41, before quantity discounts.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $18.00 per cwt; pipe, full coils, $18.00 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheets and strip, $8.50-15.95; sheared mill plate, $6.00-9.50; wire, $6.50-11.00; forging billets, $4.10-4.35; hot-rolled and forged bars, $5.25-6.35.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 24.00; ribbon zinc in coils, 20.50; plates, 19.00.

ZIRCONIUM

Plate, $12.50-19.20; H.R. strip, $12.50-22.90; C.R. strip, $15.90-31.25; forged or H.R. bars, $11.00-17.40.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	126	106	128
Strips, C.R.	124	108	138
Plate, H.R.	120	105	121
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

Sheets: 1100, 3003, and 5005 mill finish (30,000 lb base; freight allowed).

Thickness Range, Inches	Flat Sheet	Coiled Sheet
0.250-0.136	42.80-47.30	.....
0.136-0.096	43.20-48.30	.....
0.126-0.103	.....	39.20-39.80
0.096-0.077	43.80-50.00	39.30-40.00
0.077-0.068	44.30-52.20	.....
0.077-0.061	.....	39.50-40.70
0.068-0.061	44.30-52.20	.....
0.061-0.048	44.90-54.40	40.10-41.80
0.048-0.038	45.40-57.10	40.60-43.20
0.038-0.030	45.70-62.00	41.00-45.70
0.030-0.024	46.20-53.70	41.30-45.70
0.024-0.019	46.90-56.80	42.40-44.10
0.019-0.017	47.70-54.10	43.00-44.70
0.017-0.015	48.60-55.00	43.80-45.50
0.015-0.014	49.60	44.80-46.50
0.014-0.012	50.80	45.50
0.012-0.011	51.80	46.70
0.011-0.0095	53.30	48.10
0.0095-0.0085	54.60	49.60
0.0085-0.0075	56.20	50.80
0.0075-0.007	57.70	52.30
0.007-0.006	59.30	53.70

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in. 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	42.40	47.20
5050-F	43.50	48.30
3004-F	44.50	50.20
5052-F	45.10	50.90
6061-T6	45.60	51.70
2024-T4	49.30	56.10
7075-T6*	57.60	64.70

*24-48 in. width or diam., 72-180 in. lengths.

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats*	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
0.125	76.90	73.90	....	....
0.250	62.00	60.20	69.10	76.60
0.375	61.20	60.00	73.50	68.50
0.500	61.20	60.00	73.50	68.50
0.625	61.20	60.00	69.80	64.20
0.750	59.70	58.40	63.60	60.40
0.875	59.70	58.40	63.60	60.40
1.000	59.70	58.40	63.60	60.40
1.125	57.30	56.10	61.50	58.30
1.250	57.30	56.10	61.50	58.30
1.375	57.30	56.10	61.50	58.30
1.500	57.30	56.10	61.50	58.30
1.625	55.00	53.60	....	56.20
1.750	55.00	53.60	60.30	56.20
1.875	55.00	53.60	....	56.20
2.000	55.00	53.60	60.30	56.20
2.125	53.50	52.10	....	....
2.250	53.50	52.10	....	56.20
2.375	53.50	52.10	....	....
2.500	53.50	52.10	....	56.20
2.625	....	50.40	....	....
2.750	51.90	50.40	....	56.20
2.875	....	50.40	....	....
3.000	51.90	50.40	....	56.20
3.125	....	50.40	....	....
3.250	....	50.40	....	....
3.375	....	50.40	....	....

*Selected sizes.

Forging Stock: Round, Class 1, random lengths, diam. 0.375-8 in., "F" temper; 2014 42.20-55.00; 6061, 41.60-55.00; 7075, 61.60-75.00; 7070, 66.60-80.00.

Pipe: ASA schedule 40, alloy 6063-T6 standard lengths, plain ends, 90,000 lb base, dollars per 100 ft. Nominal pipe sizes: ⅜ in., 18.85; 1 in., 29.75; 1¼ in., 40.30; 1½ in., 48.15; 2 in., 58.30; 4 in., 160.20; 6 in., 287.55; 8 in., 432.70.

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
9-11	42.70-44.20	51.30-55.50
12-14	42.70-44.20	52.00-56.50
15-17	42.70-44.20	53.20-58.20
18-20	43.20-44.70	55.20-60.80

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B special grades, .032 in., 171.30; .081 in., 108.70; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths; .125 in., 74.90; .188 in., 71.70-72.70; .25-.75 in., 70.60-71.60. Tooling plate, .25 3.0 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	69.60-72.40	84.60-87.40
12-14	70.70-73.00	85.70-88.00
24-26	75.60-76.30	90.60-91.30
36-38	89.20-90.30	104.20-105.30

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots.)

Copper and Brass: No. 1 heavy copper and wire, 20.75-21.25; No. 2 heavy copper and wire, 19.00-19.50; light copper, 17.00-17.50; No. 1 composition red brass, 16.75-17.25; No. 1 com-

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES e (Based on copper at 26.50c)		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tubes	Clean Heavy	Rod Ends	Clean Turnings
Copper	49.63b	46.86c	....	49.82	22.500	22.500	21.750
Yellow Brass	43.57	29.28d	44.11	46.48	17.000	16.750	15.250
Low Brass, 80%	46.03	45.97	46.57	48.84	19.000	18.750	18.250
Red Brass, 85%	46.89	46.83	47.43	49.70	19.750	19.500	19.000
Com. Bronze, 90%	48.30	48.24	48.84	50.86	20.625	20.375	19.875
Manganese Bronze	51.52	45.74	56.18	....	15.625	15.375	14.875
Muntz Metal	45.95	41.76	....	....	15.875	15.625	15.125
Naval Brass	47.83	42.14	54.89	50.99	15.625	15.375	14.875
Silicon Bronze	54.37	53.56	54.41	56.29	22.125	21.875	21.125
Nickel Silver, 10%	58.82	61.15	61.15	....	22.000	21.750	11.000
Phos. Bronze, A-5%	68.59	69.09	69.09	70.27	23.375	23.125	22.125

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb.

position turnings, 15.75-16.25; new brass clippings, 13.75-14.25; light brass, 10.50-11.00; heavy yellow brass, 11.75-12.25; new brass rod ends, 11.75-12.25; auto radiators, unsweated, 12.75-13.25; cocks and faucets, 13.25-14.25; brass pipe, 13.25-13.75.

Lead: Heavy 8.00-8.50; battery plates, 4.50-5.00; linotype and stereotype, 10.00-10.50; electrotype, 9.00-9.50; mixed babbitt, 9.50-10.00.

Monel: Clippings, 32.00-34.00; old sheets, 26.00-28.00; turnings, 20.00-23.00; rods, 32.00-34.00.

Nickel: Sheets and clips, 52.00-55.00; rolled anodes, 52.00-55.00; turnings, 37.00-40.00; rod ends, 52.00-55.00.

Zinc: Old zinc, 3.75-4.00; new diecast scrap, 3.50-3.75; old diecast scrap, 2.25-2.50.

Aluminum: Old castings and sheets, 9.25-9.75; clean borings and turnings, 6.25-6.75; segregated low copper clips, 13.00-13.50; segregated high copper clips, 12.00-12.50; mixed low copper clips, 12.75-13.25; mixed high copper clips, 11.50-12.00.

(Cents per pound, Chicago)

Aluminum: Old castings and sheets, 11.00-11.50; clean borings and turnings, 10.00-10.50; segregated low copper clips, 16.50-17.00; segregated high copper clips, 15.50-16.00; mixed low copper clips, 16.00-16.50; mixed high copper clips, 15.00-15.50.

(Cents per pound, Cleveland)

Aluminum: Old castings and sheets, 10.50-11.00; clean borings and turnings, 9.50-10.00; segregated low copper clips, 14.50-15.00; segregated high copper clips, 13.00-13.50; mixed low copper clips, 14.00-14.50; mixed high copper clips, 12.50-13.00.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 52.50; light scrap, 47.50; turnings and borings, 32.50.

Copper and Brass: No. 1 heavy copper and wire, 22.00 nom.; No. 2 heavy copper and wire, 21.25 nom.; light copper, 19.00 nom.; refinery brass (60% copper) per dry copper content, 20.875.

INGOTMAKERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 22.00 nom.; No. 2 heavy copper and wire, 21.25 nom.; light copper, 19.00 nom.; No. 1 composition borings, 19.75; No. 1 composition solids, 20.25; heavy yellow brass solids, 14.25; yellow brass turnings, 13.25; radiators, 16.25.

PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.45.

Copper: Flat-rolled, 43.03; oval, 44.50, 5000-10,000 lb; electrodeposited, 35.25, 2000-5000 lb lots; cast, 37.75, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb, 114.25; 100-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.

Tin: Bar or slab, less than 200 lb, 115.50; 200-499 lb, 114.00; 500-999 lb, 113.50; 1000 lb or more, 113.00.

Zinc: Balls, 17.00; flat tops, 17.00; flats, 19.75; ovals, 19.00, ton lots.

CHEMICALS

Cadmium Oxide: $1.45 per lb in 100-lb drums.

Chromic Acid (flake): 100-2000 lb, 31.00; 2000-10,000 lb, 30.50; 10,000-20,000 lb, 30.00; 20,000 lb or more, 29.50.

Copper Cyanide: 100-200 lb, 65.90; 300-900 lb, 63.90; 1000-19,900 lb, 61.90.

Copper Sulphate: 100-1900 lb, 14.05; 2000-5900 lb, 12.05; 6000-11,900 lb, 11.80; 12,000-22,900 lb, 11.55; 23,000 lb or more, 11.05.

Nickel Chloride: 100 lb, 45.00; 200 lb, 43.00; 300 lb, 42.00; 400-4900 lb, 40.00; 5000-9900 lb, 38.00; 10,000 lb or more, 37.00.

Nickel Sulphate: 5000-22,000 lb, 29.00; 23,000-35,900 lb, 28.50; 36,000 lb or more, 28.00.

Sodium Cyanide (Cyanobrik): 200 lb, 20.80; 400-800 lb, 19.80; 1000-19,800 lb, 18.80; 20,000 lb or more, 17.80.

Sodium Stannate: Less than 100 lb, 76.90; 100-600 lb, 67.80; 700-1900 lb, 65.60; 2000-9900 lb, 63.10; 10,000 lb or more, 61.80.

Stannous Chloride (anhydrous): 25 lb, 152.00; 100 lb, 147.10; 400 lb, 144.60; 800-19,900 lb, 103.80; 20,000 lb or more, 97.70.

Stannous Sulphate: Less than 50 lb, 137.30; 50 lb, 107.30; 100-1900 lb, 105.30; 2000 lb or more, 103.30.

Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

Tool Steel . . .

Tool Steel Prices, Page 149

Shipments of high speed and tool steel (excluding hollow drill steel) in August totaled 5565 net tons, reports the American Iron & Steel Institute. In July, 3891 tons were shipped, and in August a year ago, 7479.

Total movement in the first eight months this year was 43,627 net tons, vs. 69,596 in the like 1957 period.

Pig Iron . . .

Pig Iron Prices, Page 150

Movement of pig iron is tending upward. A leading mid-Atlantic region seller reports a 10 per cent gain in bookings last month and looks for a further increase this month. Improvement is due to heavier consumption and reflects little, if any, increase in buying for stock accumulation.

Blast furnace operators are relighting additional units. Mystic Iron Works will return its furnace at Everett, Mass., to blast Nov. 1. This furnace (the only one in New England) has been banked since July 1. J. H. Treanor, president, emphasizes the need for replenishing inventory of certain grades rather than a significant improvement in general demand for iron. The company, he says, has a substantial stock of most grades, but is hopeful market conditions will support continued operations.

Tennessee Coal & Iron Div.'s Ensley (Ala.) Works resumed limited operations after having been shut down since early in July. Two blast furnaces have reopened. However, the No. 5 blast furnace at the Fairfield (Ala.) Works is scheduled to be shut down for major repairs this month.

U. S. Steel relighted its No. 10 blast furnace at South Works, South Chicago, Ill., Oct. 6. This brings the district's total to 33 active out of 43 stacks. Within one week, four blast furnaces resumed operations in the district.

Republic Steel Corp. placed another blast furnace in operation at its Cleveland plant last week, making a total of four active out of six.

Some Australian iron arrived at

WANTED

METAL PRODUCTS TO MANUFACTURE

Large, well equipped, well capitalized, sheet metal, light plate and structural shop is seeking assemblies or subassemblies to manufacture.

Plant has 170,000 sq. ft. of floor space and is centrally located in highly industrialized area. Equipment for square and rotary shearing, stamping (presses up to 200 tons), rolling, brake-forming, spot and seam-welding, manual arc, heliarc, sigma and unimelt welding, angle tube and bar forming, spray or dip painting, adequate packing and rail facilities available.

Practically no physical limitations as to length, height or weight of product. **WRITE BOX NO. 690, STEEL, PENTON BLDG., CLEVELAND 13, OHIO.**

WANTED

WIRE DRAWING MACHINE

To draw ¼" wire down to finer sizes.

CAVALER SPRING CO., INC.
139 N. Summit Detroit 9, Mich.

Foreman—Layer-out

In medium sized shop doing general plate and sheetmetal work, also some structural. Must be experienced man able to direct 35 to 40 men. Retirement causing this opening. Confidential. Please reply giving age, past experience, salary expected, etc. Box 694, STEEL, Penton Bldg., Cleveland 13, Ohio.

MILL DEPARTMENT FOREMAN

Two Yoder M2-½ Rolling Mills. Liberal pensions, bonus, insurance. Progressive plant in small community with fine schools, recreation and nearby lakes. Send experience resume, references and salary range expected to: **Box 692, STEEL**
Penton Bldg. Cleveland 13, Ohio

CLASSIFIED

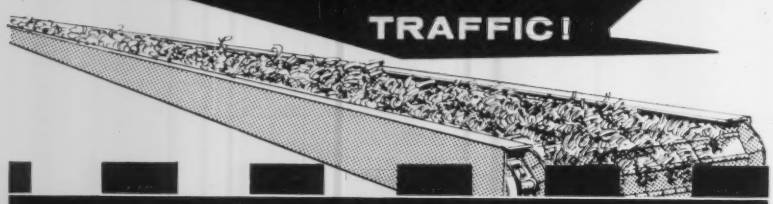
Positions Wanted

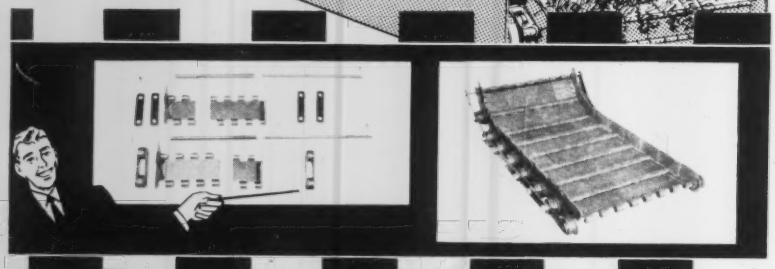
STEEL WAREHOUSE MANAGER, 34, college Business Administration graduate. Seven years experience all phases of steel business, 2 years warehouse managerial experience. Five figure salary expected, good potential seriously considered. Write Box 696, STEEL, Penton Bldg., Cleveland 13, Ohio.

CLASSIFIED RATES

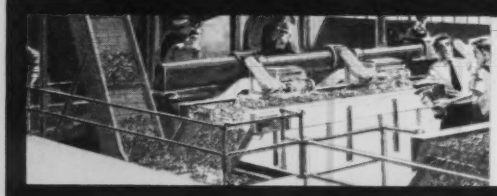
All classifications other than "Positions Wanted" set solid, 50 words or less $15.00, each additional word .30, all capitals, 50 words or less $19.20, each additional word .38; all capitals leaded, 50 words or less $23.40, each additional word .47. "Positions Wanted" set solid, 25 words or less $3.60, each additional word .14, all capitals, 25 words or less $4.50, each additional word .18; all capitals leaded, 25 words or less $5.40, each additional word .22. Keyed address takes seven words. Cash with order necessary on "Positions Wanted" advertisements. Replies forwarded without charge. Displayed classified rates on request. Address your copy and instructions to STEEL, Penton Building, Cleveland 13, Ohio.

HERE'S A STEEL HIGHWAY FOR YOUR SCRAP TRAFFIC!





May-Fran Hinged-Steel Belting is assembled from mass-produced components to form a materials handling belting of almost any width, length or contour to meet individual specifications. Links are joined by means of steel rods . . . links, wings and side chain become integral unit.



Belting can be assembled in a wide range of lengths, widths and contours . . . to facilitate the handling of metal scrap, hot forgings, stampings, flash, wet or dry chips as well as other sharp or rough materials.

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- Handles heavy, hot and rough materials
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7851-MF

MAY-FRAN HINGED-STEEL BELTING GIVES PRODUCTION SAVINGS THROUGH SCRAP HANDLING EFFICIENCY

Precision formed steel links are assembled in horizontal rows and joined by high-carbon steel tubes and connecting rods. These rods are fastened to side chains to support the belt links so they "float" freely, and side chain takes all tension. Wings remain positively engaged and in continuous overlap at all times, even over sprockets.

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Title
Company
City Zone State

Seattle recently at prices ranging down to $4 a ton under the domestic market. Japan also is offering iron at attractive prices, but there is little interest in this material. The high phosphorus and low carbon content offsets the competitive price advantage.

Ferroalloys . . .

Ferroalloy Prices, Page 152

Electro Metallurgical Co., a division of Union Carbide Corp., New York, announces a new Type "M" chromium carbide, available in large quantities in 325 and 10 mesh by down.

Prices are $2.60 a pound for tonnage orders and $3 a pound in smaller amounts, f.o.b. Niagara Falls, N. Y. These prices represent a reduction of more than 25 per cent.

The new powder supplements Type "O" chromium carbide previously available.

Steel Shipments Up 18%

Shipments of finished steel products during August totaled 4,835,023 net tons, reports the American Iron & Steel Institute. That's more than 18 per cent higher than the July figure, 4,081,744, and compares with 6,229,853 tons in August, last year.

Principal products shipped during the month included: Cold-rolled sheets, 799,631 tons; hot-rolled sheets, 474,328 tons; electrolytic tin plate, 464,439 tons; hot-rolled bars (including light shapes), 455,037 tons; plates, 398,343 tons. Shipments of hot and cold sheets, as well as bars, were considerably above July levels.

Market classifications receiving the largest tonnages during August included: Warehouses and distributors, 907,309 net tons; automotive, 783,078; construction (including maintenance), 742,251; containers, 602,352; contractors products, 288,213. All of the markets named received larger tonnages in August than in July.

Total shipments for the first eight months this year amounted to 37,618,370 net tons, vs. 56,392,714 in the like period last year.

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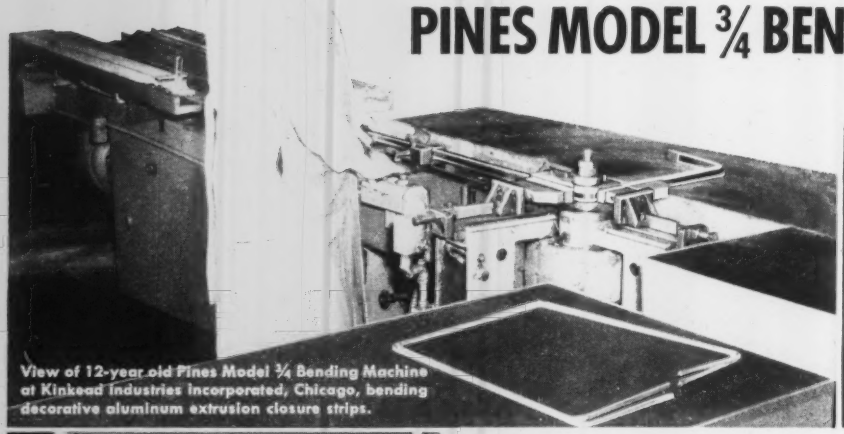
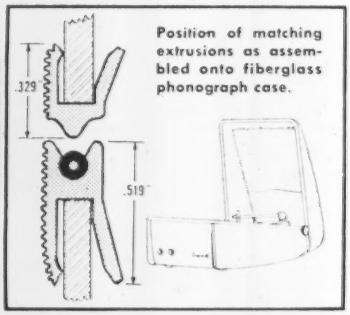
800 Bends An Hour

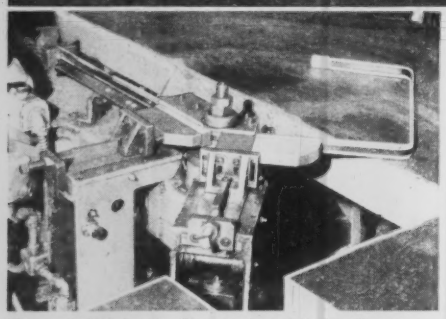
IN ANODIZED EXTRUSIONS ON PINES MODEL ¾ BENDING MACHINE



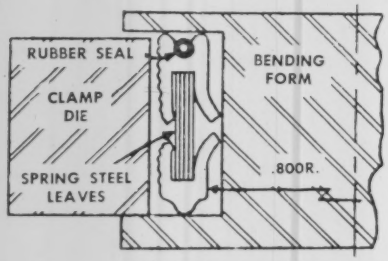
View of 12-year-old Pines Model ¾ Bending Machine at Kinkead Industries Incorporated, Chicago, bending decorative aluminum extrusion closure strips.



Position of matching extrusions as assembled onto fiberglass phonograph case.



Close-up showing tooling employed in bending two matching extrusions simultaneously. Black strip separating two extrusions is spring-steel mandrel used to prevent collapse of open sections during bending.



Extrusions are positioned in tools as illustrated above. Die surfaces are nylon coated to prevent scratching the anodized finish. Rubber seal is installed in straight lengths before bending.

How Accurate Bending Simplifies Fitting of Scratch-Free, Matching Closures on Phonograph Cases

A unique tooling setup on a Pines Model ¾ Bending Machine enabled Kinkead Industries Incorporated, of Chicago, to fill an order for accurate 90° bends in matching aluminum extrusions. Bends are made simultaneously in a pair of extrusions at net production averages of 800 bends, or 100 pair of frames, per hour. Accurate forming simplifies corner fitting and assembly of the completed pieces used as closure strips on phonograph cases. As illustrated, the two extrusions are mounted on spring-steel strips which serve as an internal mandrel and prevent collapse of the sections in the bend area. Bending the two strips simultaneously assures perfect mating when assembled onto the fiberglass cases.

Ends Meet in Butt-Fit Without Trimming

Before bending, both of the extruded shapes are anodized to a beautiful, bright finish. Die surfaces are faced with nylon to protect the decorative finish and prevent marring during the bending operation. No lubrication is required. The uniform accuracy of the bending operation also eliminates any need for trimming the pre-cut stock. The ends meet in a butt-fit. Kinkead's fine line of stainless steel and aluminum products, known as "Kintrim," is another example of the quality bending results that have long been achieved on Pines Benders. Look to Pines for the practical solution to *your* bending problems.

PINES ENGINEERING CO., INC.

Specialists in Tube Fabricating Machinery

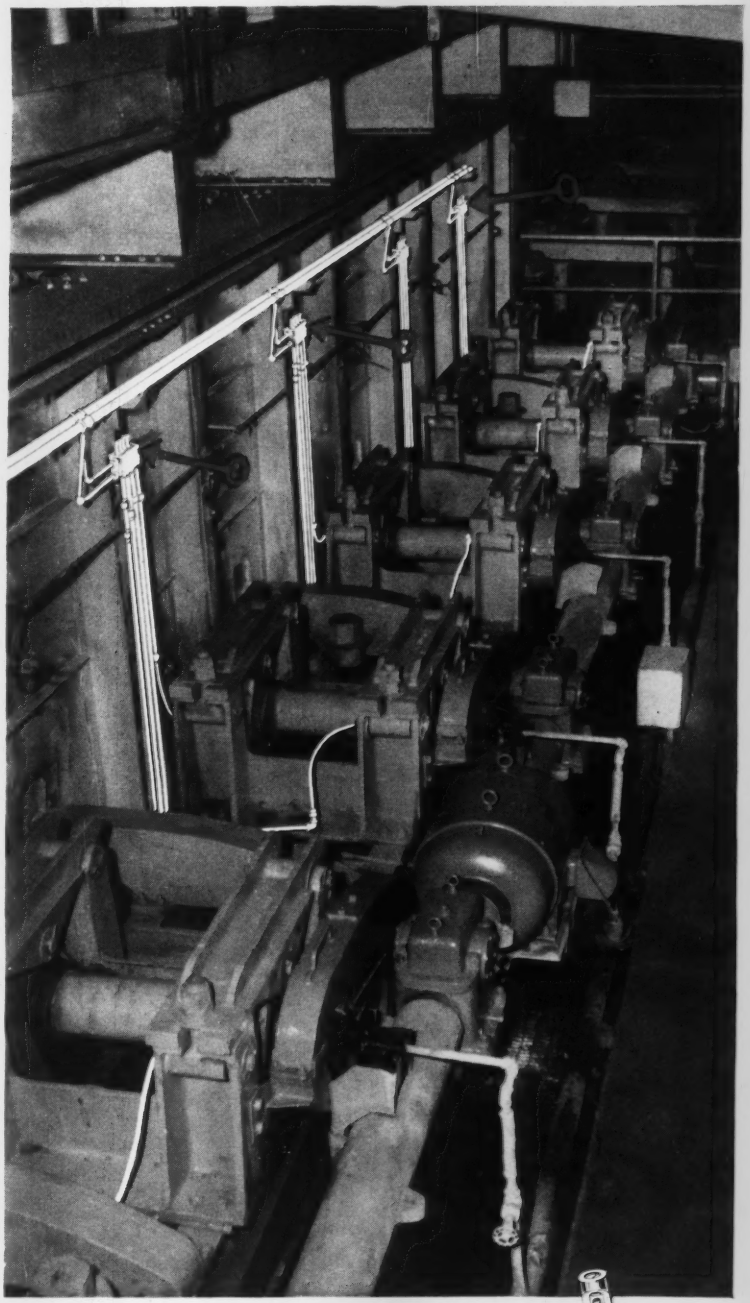
662 WALNUT • AURORA, ILLINOIS

WRITE FOR FREE CASE STUDIES

For case study reports on the cost-cutting advantages of cold forming the "Pines-Way," write for free copies of Pines News. For analysis on any job, ask a Pines representative to call.

PRODUCTION BENDING • DEBURRING • CHAMFERING MACHINERY

Farval provides dependable lubrication for National Tube's tempering furnace



FARVAL—Studies in Centralized Lubrication No. 221

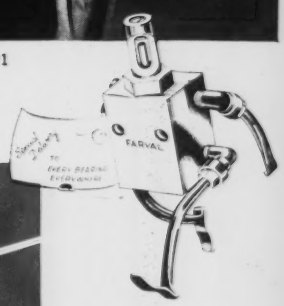
AT U. S. Steel Corporation's National Tube Division this Surface Combustion High Yield Furnace—used in their Warm Working Process—heats pipe to 900-1000° before it enters the sizing mill. To provide steady, reliable lubrication to the 32 brass drive bearings, a Farval Manual Dualine lubrication system was selected.

This installation is another example of how standard Farval systems continually solve lubrication problems of all types of metalworking machines. Giving the greatest operation flexibility under the widest range of physical requirements, a Farval system lets you pick the best lubricant for your requirements.

You can solve your lubrication problems by asking for Bulletin 26-S. Write The Farval Corporation, 3270 East 80th Street, Cleveland 4, Ohio.

KEYS TO ADEQUATE LUBRICATION

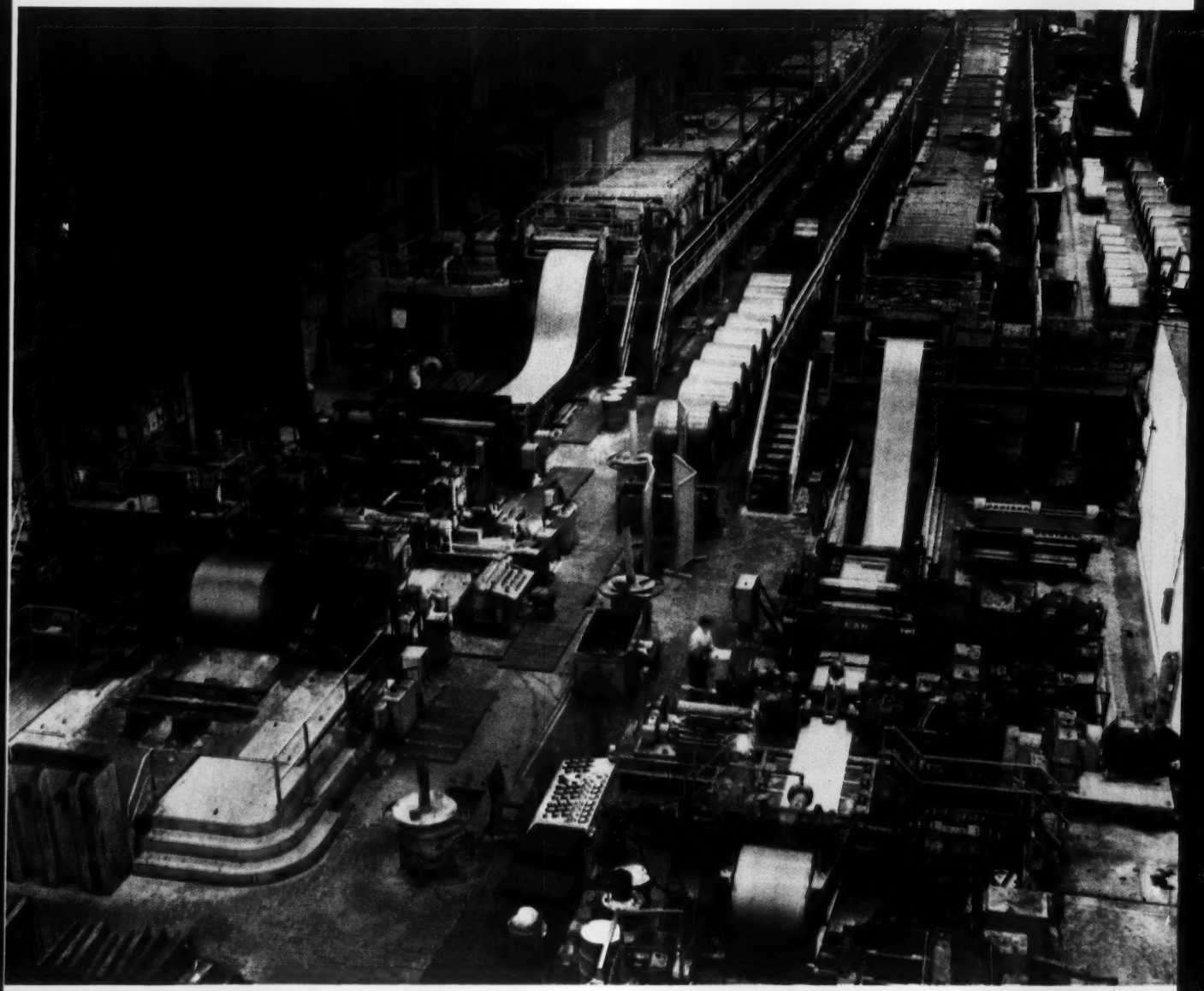
—wherever you see the sign of Farval —familiar valve manifolds, dual lubricant lines and central pumping station—you know a machine is being properly lubricated.



FARVAL
CENTRALIZED SYSTEMS OF LUBRICATION

Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.

650,000 Miles of Driving Per Minute



"A" & "B" Pickling Lines—Jones & Laughlin, Cleveland

Each minute of operation these pickling lines process enough quality steel to produce automobiles that will give the American public 650,000 miles of carefree driving. High quality steel, mass produced by America's modern steel industry, has helped make low priced automobiles available to every family in the United States. These continuous strip pickling lines are typical of the modern production methods used in our steel mills today.

The Wean Engineering Company, Inc. has engineered and constructed seventy-one continuous pickling lines

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